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ARCHAEOLOGY

UNEARTH THE SECRETS OF CIVILISATION

DIGGING UP THE PAST

HOW ARCHAEOLOGISTS EXCAVATE LOST CITIES

Digital Edition

THIRD EDITION

ANCIENT ARTEFACTS • SIGNIFICANT SITES • HONOURING HISTORY

WELCOME

Humans have been fascinated by their own origins for thousands of years. Digging up the past by excavating ancient sites, discovering artefacts of a bygone era and analysing biofacts help us to learn about the lifestyles of our ancestors and understand where we come from. Without the crucial work performed by archaeologists we wouldn't have such a wealth of information on the life and times of the Romans, the Ancient Greeks, the Ancient Egyptians or the Vikings. *All About History's Book of Archaeology* celebrates this integral discipline and how it developed from an amateur pursuit into a fully fledged profession. Explore archaeology's most important global discoveries, what they have revealed about the people of the past and how modern archaeologists are using cutting-edge science to unearth, preserve and conserve history for generations to come.

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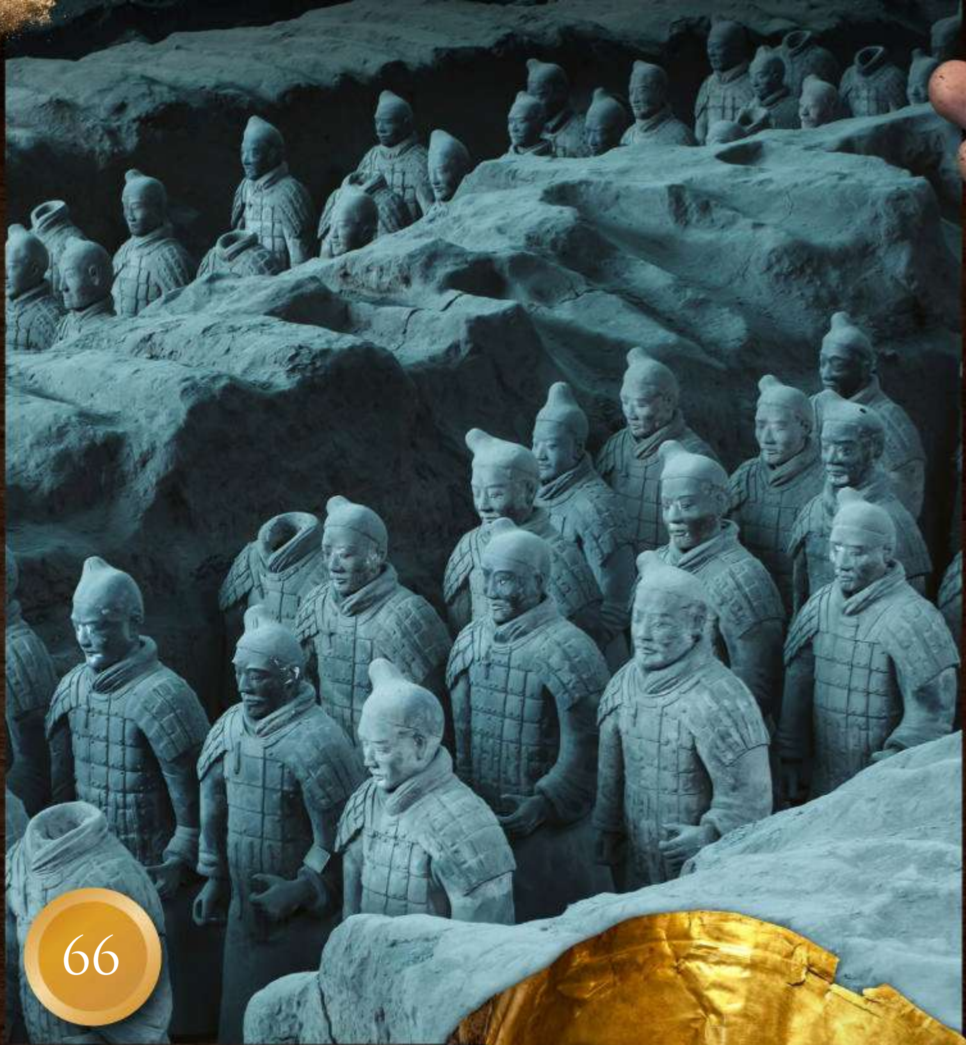

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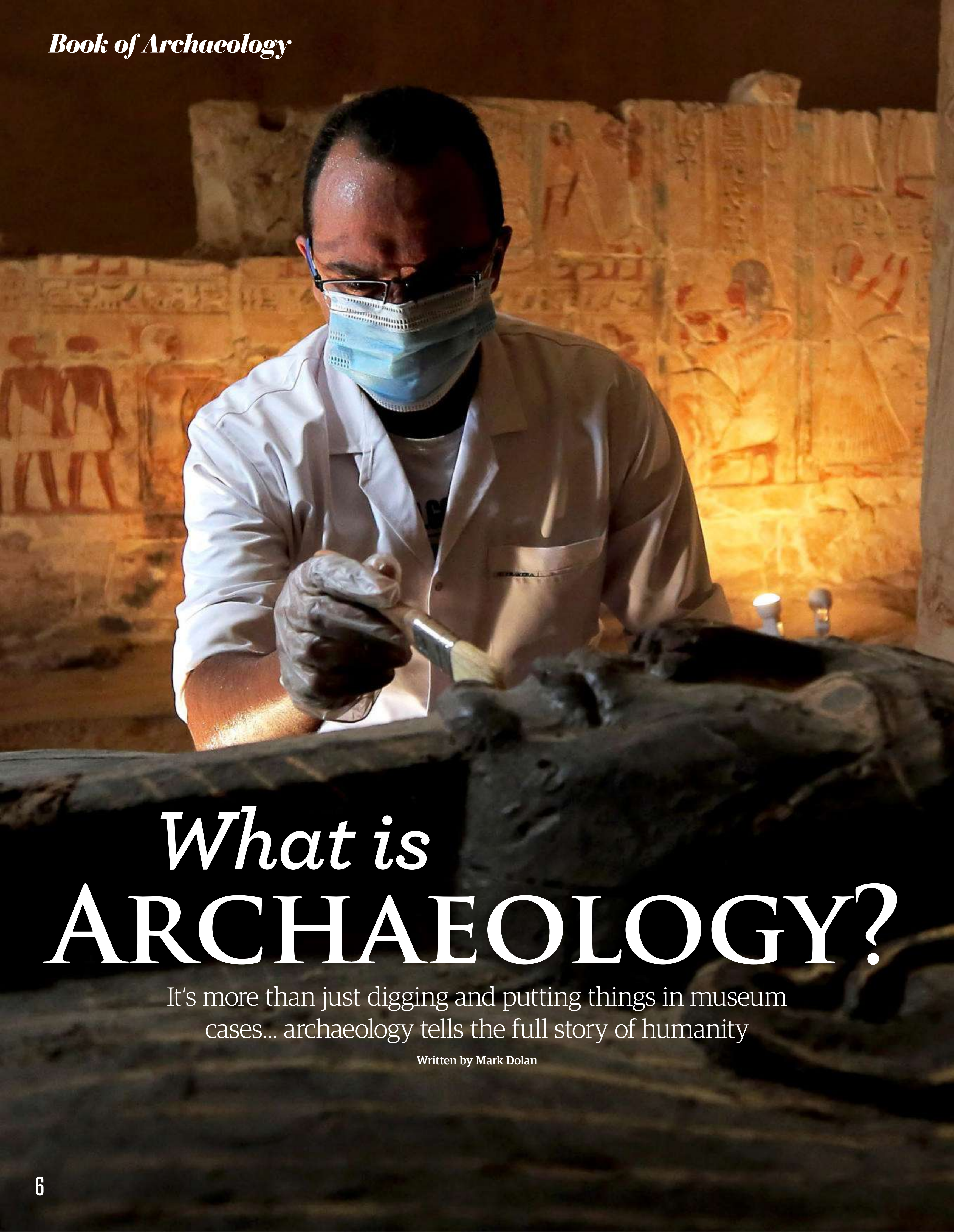


What is ARCHAEOLOGY?

It's more than just digging and putting things in museum cases... archaeology tells the full story of humanity

Written by Mark Dolan

Archaeology is the study of the human past. What, then, separates it from history? The key is that where history primarily uses the written word, archaeologists study the human past through things, and yes, that is a technical term! Archaeologists use the material remains of human societies in order to reconstruct everything from what they ate through to their religious beliefs.

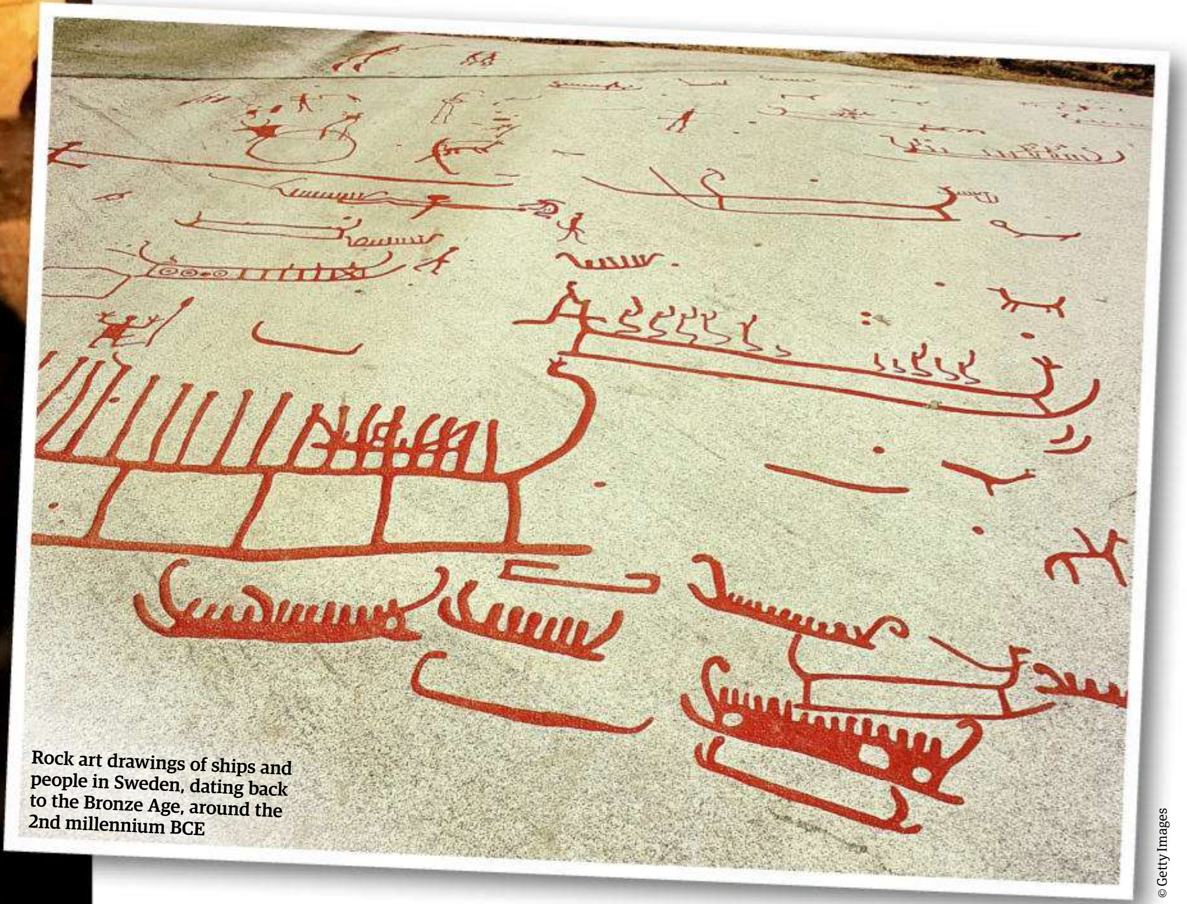
Archaeologists use every kind of material that has survived into the present day, not just the things that you might expect, such as pottery and stone tools, but items such as animal bones and shells and even the microscopic silica deposits (phytoliths) that plants produce, which can survive for centuries after plants die. Every tiny piece of evidence gives us an insight into how the world used to be, and how people lived, ate, interacted, and constructed their landscape.

Archaeology enables us to understand previous and current human behaviour

Archaeology ranges from the grandeur of well-known wonders such as Stonehenge, the Terracotta Army and Machu Picchu, to smaller but no less wonderful discoveries. These include things like 3,000-year-old string; plant remains that suggest Neanderthals might have buried their dead with flowers; and pictures of ships carved into rock faces that had cracks in, so that the ships would look like they were sailing on the water that ran through the fissures.

But beyond the fascination of the ancient world, why do we bother with archaeology? The first issue, of course, is that if we don't record, study and preserve the past, it will be lost forever. Contrary to what you might expect, excavation is the last resort of archaeologists. Preservation of the past is the best outcome, ie leaving it where it is. Unfortunately, building developments mean that this often isn't possible. So, archaeologists will excavate historic sites, meticulously recording the location of all finds, photographing features (the name given to any immovable element of an archaeological site, such as built structures, ditches, pits and graves), drawing sketches of the features and establishing the site's stratigraphy (the order of creation of its features).

Of course, there need be no greater reason to practise archaeology beyond the love of it, but it is much more than just a race to preserve the past. The material past can be invaluable in helping to understand the world around us today. By studying the ancient environment and the plants and animals that existed in different places and times, we can see the bigger picture of how the Earth's climate has changed over a long time scale, allowing us to understand the mechanisms and effects of climate



Rock art drawings of ships and people in Sweden, dating back to the Bronze Age, around the 2nd millennium BCE

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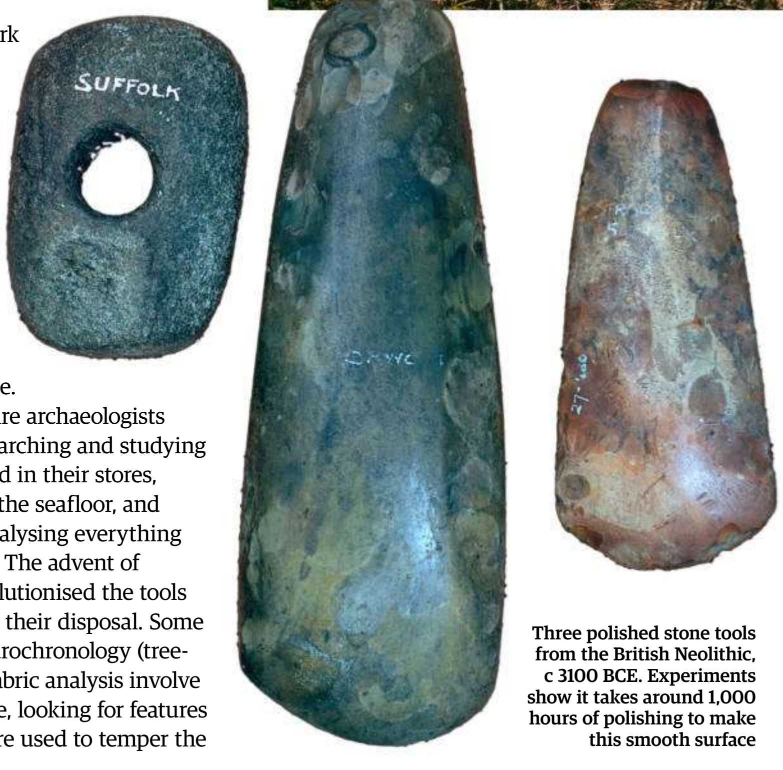
change. By studying how people used art and imagery to communicate and shape their societies, we can gain a greater understanding of the central importance of art and creative expression to humanity, and by examining the microscopic remains of food on the inside of pots, we can discover the diet of our ancestors.

Archaeology's relevance is not only in the past, though, it is a fundamental way of understanding the current state of the world, from the development of racist ideas such as eugenics, colonialism and white supremacy, to the tourist industry that exists around famous ancient monuments like Petra, the Colosseum, and Göbekli Tepe. The importance of archaeology in the political sphere is evident from the intentional destruction of heritage by terrorist groups, to the work of UNESCO to preserve it.

When trying to understand the entirety of the human past, from the development of cities and nations to everyday activities like cooking and making tools, you need a wide range of approaches and differently-minded people. This is why there are so many types of archaeologists out there working to better understand the past. The most known are those who work as field archaeologists. These are the people who will do most of the excavating. The most important tools in a field archaeologist's arsenal are the mattock, used to move a lot of earth quickly to find the dimensions of features, and the ever-present trowel, used for the more intricate excavation of thin layers of soil and section edges.

There are many other types of archaeologists, who may not be what you think of when someone says 'I'm an archaeologist'. There are hundreds of specialists, including osteoarchaeologists, who work with human bones; zooarchaeologists, who work with animal remains; and bioarchaeologists, who work on environmental remains. Some specialise in material analysis, and become ceramicists, metallurgists or lithic (stone tool) experts, while others might dedicate themselves to a particular place and/or time.

Beyond the field, there are archaeologists working in museums, researching and studying the collections that are held in their stores, excavating shipwrecks on the seafloor, and working in laboratories, analysing everything from soil samples to teeth. The advent of scientific analysis has revolutionised the tools that archaeologists have at their disposal. Some technologies, such as dendrochronology (tree-ring dating) and ceramic fabric analysis involve examination mainly by eye, looking for features such as inclusions that were used to temper the clay (which even include older ground-up pots, known as 'grog'). Other techniques are more technical, with isotope analysis used to determine what substances were kept in different containers, which region of the world a person grew up in, or how old an object is.



Three polished stone tools from the British Neolithic, c 3100 BCE. Experiments show it takes around 1,000 hours of polishing to make this smooth surface

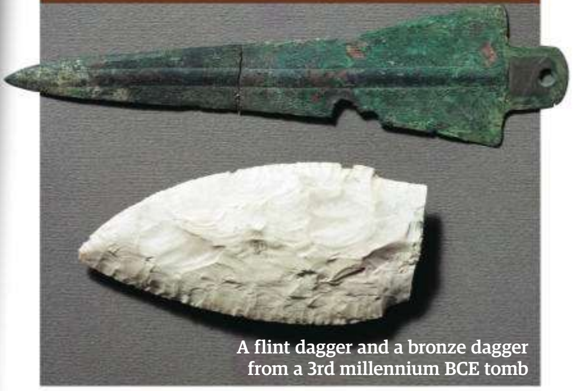
Some archaeologists even take a different approach to understanding what life was like for people in the past, conducting a wide range of experimental work to reconstruct the ancient world. Flintknapping – the process of making stone tools – is now well-understood partly thanks to the efforts of archaeologists who have dedicated themselves to learning the technique, going as far as to spend thousands of hours polishing stone tools. Maritime archaeologists have created reconstructions of ancient ships, such as the Kyrenia, a 4th-century BCE Greek merchant ship, with the new version – Kyrenia II – successfully sailing across the Mediterranean Sea.

It takes a huge workforce to understand the ancient world, people from all backgrounds working together in different ways to build up a comprehensive picture of our shared past.

THE THREE-AGE SYSTEM

How a Dane made history out of archaeology

In the 18th century, a Danish antiquarian called Christian Jürgensen Thomsen analysed the grave goods in prehistoric tombs, finding that there were certain groups of objects that repeatedly appeared together: stone tools were found with amber, glass beads and pottery; bronze with iron and gold; but silver only appeared alongside iron. He also noticed that bronze weapons did not appear alongside iron objects, reasoning that each age could be defined by its preferred cutting material. From this observation he created the Three-Age System, outlining three distinct phases of development: Stone Age, Bronze Age and Iron Age.



A flint dagger and a bronze dagger from a 3rd millennium BCE tomb

A team of archaeologists inspecting the excavations at the site of Garibin Tepe in Van, Turkey

KAZI ALANIDIR
GİRİLMESİ
TEHLİKELİ
ve
YASAKTIR

Archaeology THROUGH TIME

From ancient Babylonian kings and stories of dragons, to carbon dating and MRI machines, the history of archaeology is a long and strange story

Written by Mark Dolan

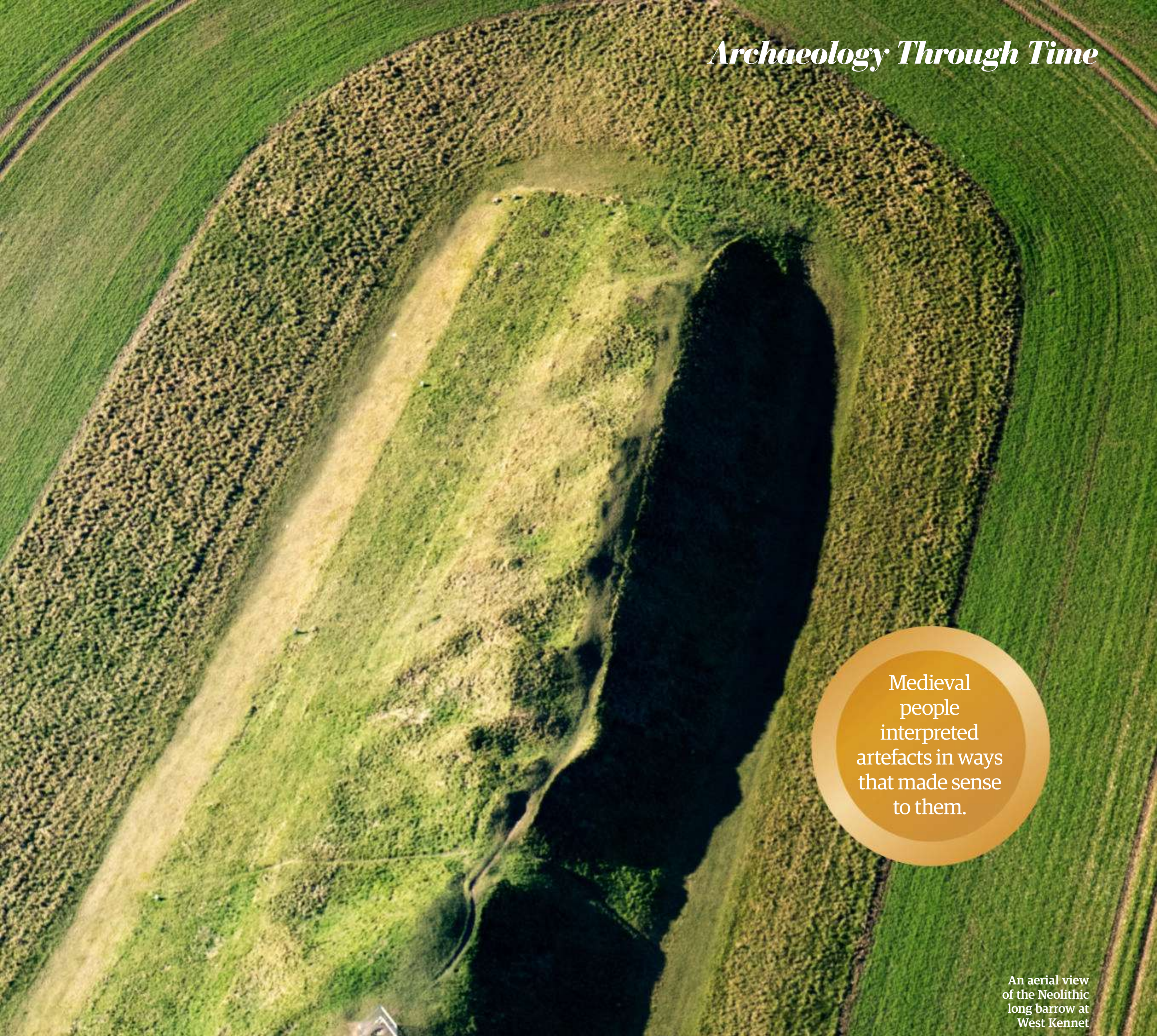
Archaeology is such an old phenomenon that archaeologists have begun to study themselves! The first 'archaeologist' that we know about is Nabonidus, a 6th century BCE king of Babylon. While observing the Mesopotamian idea that to properly rebuild a temple it needed to be excavated and rebuilt according to the original plans, he uncovered artefacts belonging to his predecessor, Naram-Sin, who ruled 3,200 years earlier. His efforts to try and date the objects, which were commendable if off by about a thousand years, are the first known attempts to date archaeological remains.

The Roman historian, Suetonius, who was writing in the 1st century CE, recorded that Emperor Augustus, who ruled from 27 BCE - 14 CE, was a collector of the weapons of ancient heroes, like those recorded by Homer almost a thousand years earlier. Around 250 years later, St Helena of Constantinople, the mother of Roman Emperor Constantine and patron saint of archaeologists, went off searching for the True Cross when she was probably well into her 70s!

By the Medieval period, people in the West were rediscovering the ancient landscape and understanding it in the ways that made the most sense to them. Prehistoric monuments such as long barrows - large burial mounds - were sometimes thought to be the graves of an extinct race of giants or even dragons. In Beowulf, the Old English epic poem that dates to c 700-1000 CE, there is a description of Beowulf fighting a dragon who lived in an ancient barrow surrounded by treasures. This detail would have been based on the reality of the ancient grave goods that were often deposited in barrows in the Neolithic and Bronze Ages.

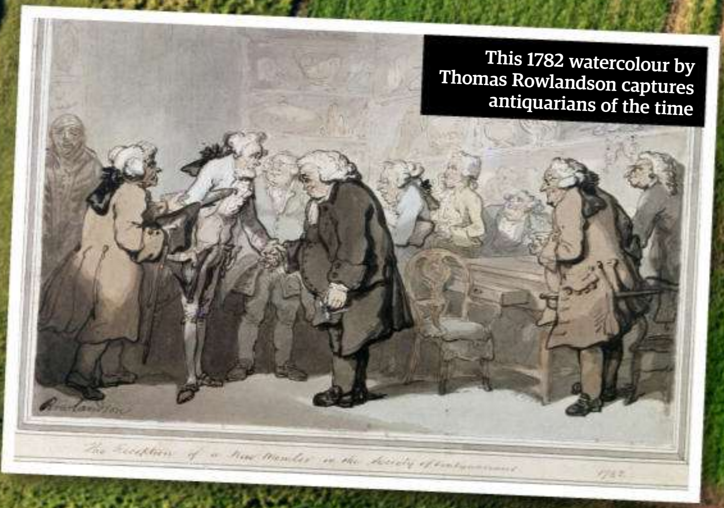
Sometimes the effects of weathering and the burrowing of animals would cause previously buried objects to find their way to the surface, including large pots that were probably cremation urns. These became known to people as 'magic crocks', and helped to create further intrigue into the mysterious places that they came from.

At the same time, farmers ploughing their fields were uncovering stone tools and arrowheads that were believed to be either 'elfshot' or thunderbolts. Elfshot was the name given to localised pain that people and animals would feel without any apparent cause, due to the belief that invisible elves or pixies were causing the injury by shooting arrows at them! When the Neolithic arrowheads were found, it was believed that these were the projectiles used by the elves, and they were sometimes turned into pendants and worn as amulets to ward off the elves' evil. These people didn't believe that the elves were making these objects, though. They ascribed them a much more fantastical origin: they thought they were lightning bolts! The idea was that these would have fallen from the sky during thunderstorms and were picked up and used by the elves.

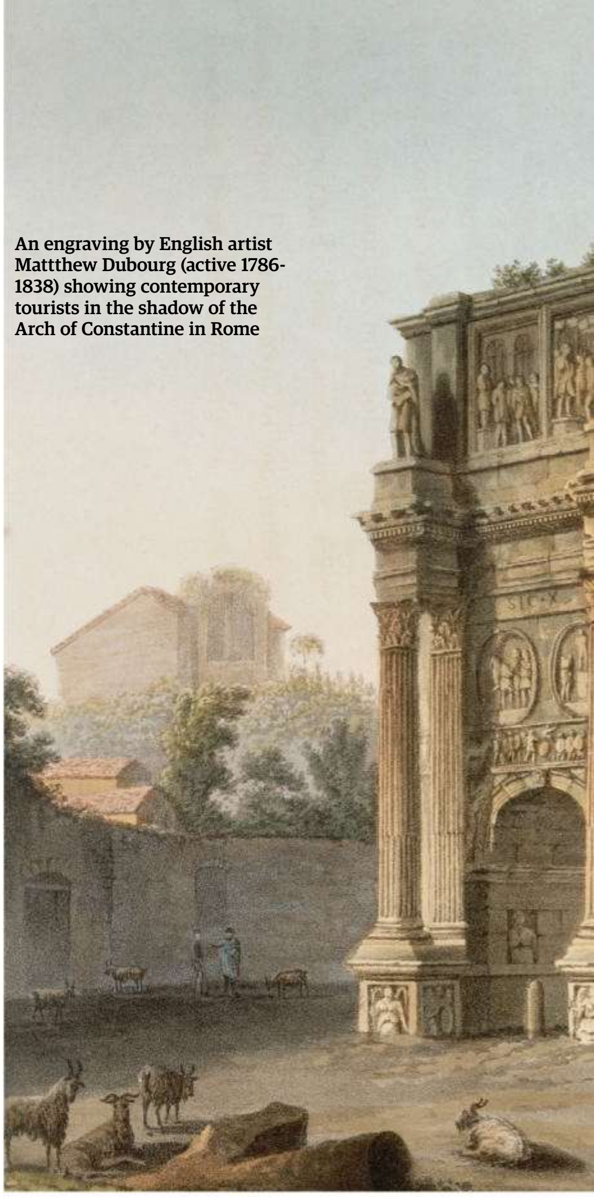


Medieval people interpreted artefacts in ways that made sense to them.

An aerial view of the Neolithic long barrow at West Kennet


Rowlandson
The Reception of a New Member in the Society of Antiquarians
1782

This 1782 watercolour by Thomas Rowlandson captures antiquarians of the time



An engraving by English artist Matthew Dubourg (active 1786-1838) showing contemporary tourists in the shadow of the Arch of Constantine in Rome

Magical or not, these objects all caught the imagination of Medieval Europe, and people started collecting them and showing them off to others, leading to the rise of the Cabinet of Curiosities (the precursors to museums) and the advent of antiquarianism.

THE RISE OF THE ANTIQUARIANS

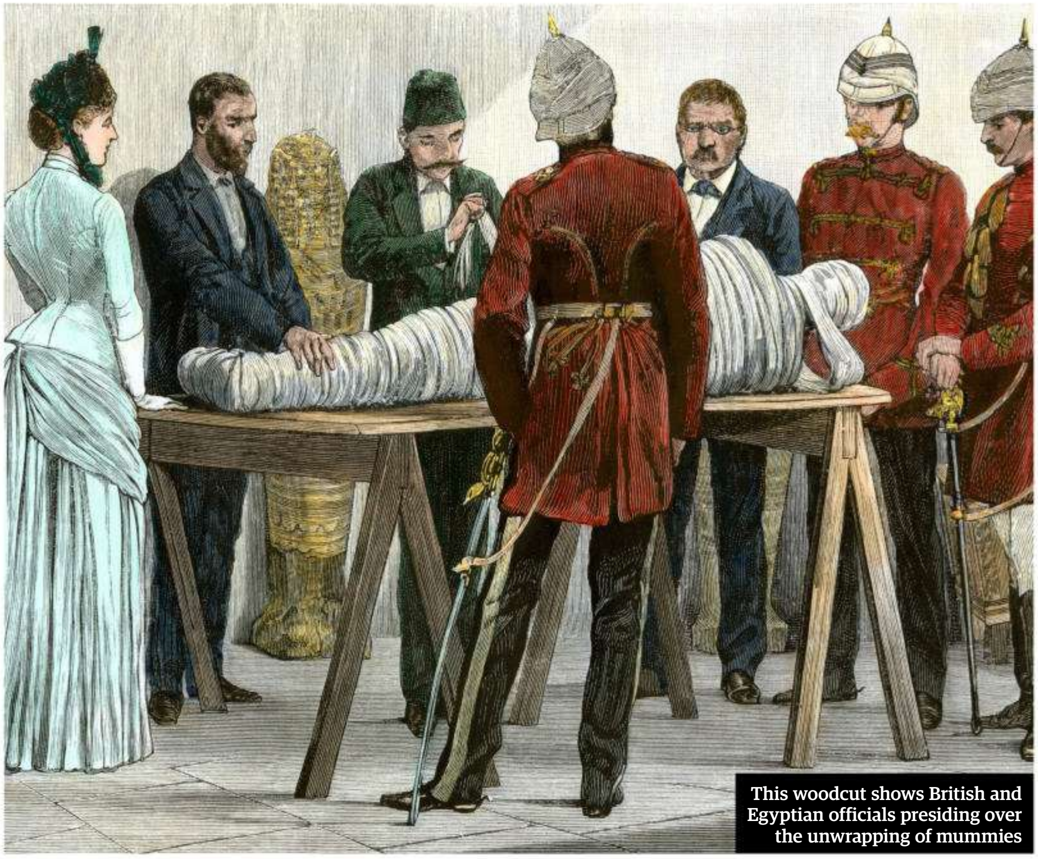
The next phase in the development of archaeology as a discipline came in the form of antiquarianism. Towards the end of the 14th century, as Europe entered the Renaissance, the old political system of small, weak kingdoms gave way to the rise of larger monarchies with greater territory and economic power. In Italy, which spearheaded this new culture, scholars looked to the past for precedents for the new political system, and they turned to the texts of Ancient Greece and Rome, the civilisations considered the greatest of the ancient world. These were held as cultural and aesthetic ideals that Europe should rediscover. This led to the collection, display and celebration of Classical literature, statues, art and artefacts.

Statues and objects from antiquity began to be collected and displayed, initially in churches, but later in the homes of the wealthy, those who were able to dedicate time and money to the new fashionable hobby. Even monarchs got in on the act, sometimes hiring antiquarians to build and sort their collections for them!

Eventually, antiquarians started looking further afield than just Greece and Rome, with the interest being picked up by aristocrats in northwest Europe including Britain and Sweden. Instead of Classical buildings, these antiquarians turned their attention to local antiquities and monuments such as runic stones, stone circles and burial mounds. This marks the beginning of the transition from antiquarianism towards a more systematic archaeology, as some pioneering antiquarians began to get interested in monuments and sites, rather than just artefacts. In 1662, the first university chair of archaeology was created in Uppsala, Sweden, though it would be another 200 years until the discipline really started to leave the antiquarian ethos behind.

During the 18th century, new projects being undertaken at sites such as Pompeii and Herculaneum led to the rise of tourism to see the ancient wonders, and these sites became key stops on the Grand Tour, which was the fashionable journey for young men and women of the social elite across Europe, but particularly in Britain. They would embark on the Grand Tour to see the wonders of Ancient Greece and Rome and study Classics. This experience quickly became an essential milestone on the way to a cultured and educated adulthood. The increasing relationship that the world of Classical Antiquity had with wealth and status pushed the antiquities trade to greater lengths than ever before, as collectors sought to display their collections and thereby showcase their education and culture. The outcome of this fascination with Classical Archaeology had another side, one that led to ideas that underscored how archaeology was practised as it developed into an area of academic study in the 18th and 19th centuries.

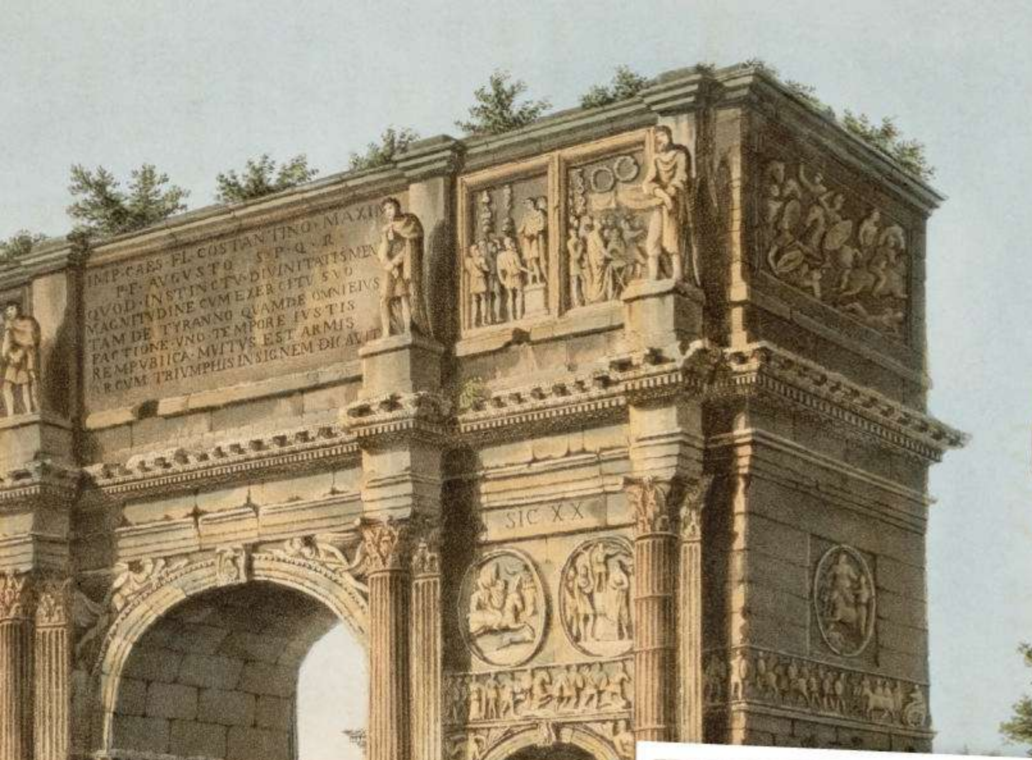
> "Some pioneering antiquarians began to get interested in monuments and sites, rather than just artefacts"



This woodcut shows British and Egyptian officials presiding over the unwrapping of mummies

ARCHAEOLOGY AND FURTHERING THE COLONIAL PROJECT

Late 17th- and 18th-century scholars became attached to the ideas put forward by Ancient Greek and Roman philosophers who suggested that civilisations went through a predictable and linear progression of technology, going from 'primitive' to 'civilised'. This idea formed the basis of J Thomsen's Three-Age System (Stone Age; Bronze Age; Iron Age), but it fit well with



Agamemnon's mask survived – the city did not

Howard Carter's discovery of Tutankhamun kicked off a wave of 'Egyptology'

the opinion at the time in Britain and Western Europe that Europeans, who were the most technologically advanced societies, were therefore superior to other groups of people who were more 'primitive'. During this time, though, archaeology as a systematic process evolved from the treasure hunts of the earlier period into genuine attempts to understand the past by carefully digging sites, recording what was found and where, and applying the newly formed scientific method to the archaeological material.

It was in the second half of the 18th century that antiquarians' collections, housed previously in their own homes, began to morph into the large European museums we are familiar with today. Both the British Museum and the Musée du Louvre started as the collections of one person before opening up as public institutions in the 18th century. Louis XIV of France vacated the Louvre in favour of the Palace of Versailles at the end of the 17th century, leaving the Louvre to house the Royal Collection, which included a large collection of Classical Greek and Roman art. During the French Revolution at the end of the 18th century, it was decided that the Louvre would become a public museum for the display of France's masterpieces. Its doors opened in 1793.

The British Museum was also founded in the 18th century from the initial collection of a single person. In 1753, the British government passed an Act of Parliament creating the world's first free public national museum and bought the collection of the President of Royal Society Hans Sloane. Sloane's collection, amassed through his involvement in the slave trade, comprised over 80,000 natural history specimens, 40,000 books and manuscripts, and 32,000 coins and medals, and represents the heart of the British Museum collection to this day, though now the museum has over eight million objects!

Although initially the British Museum was only open to a restricted portion of the population, by the early 19th century it was admitting "any person of decent appearance" (a deliberately subjective rule that in reality continued to restrict who was welcome), which increased the number of people who visited. Both the British Museum and the Louvre presented their Classical collections as their centrepieces and portrayed

The British Museum continues to dedicate a large area to Egyptian treasures their nations as the natural heirs to these renowned civilisations.

WHEN NATIONALISM MEETS ARCHAEOLOGY

The 19th century saw archaeology develop into a professional discipline and nationalism emerge as a political ideology, and the two were closely intertwined. The framing of the Western European nations – such as Britain, France and Germany – as the natural heirs of the Classical civilisations and the most developed of the modern societies allowed them to go to 'less developed' areas, such as Egypt, Turkey, the Americas, and the Ancient Near East, and excavate the ancient landscape under the auspices of being the most learned and suitable people to do so. Many of these expeditions remained little more than treasure hunts, with the likes of Heinrich Schliemann and Luigi Palma di Cesnola using questionable methods and justifications. Schliemann, whose aims were to lend archaeological credence to the events told by Homer in *The Iliad*, utilised dynamite to blast through layers of archaeological material at the site of Hisarlik in modern-day Turkey, believed to be the ancient site of Troy. Unfortunately, while Schliemann was confident that he'd hit the right level, and announced discoveries including the 'Death Mask of Agamemnon', it is now thought that in his haste, he blew up the actual remains of the historic city.

Cesnola, who was the American consul to Cyprus and whose collection eventually formed the basis of the Metropolitan Museum of Art in New York, employed hundreds of workers to dig into the island's ancient tombs and find the most impressive objects. He even made up spectacular tombs containing wonderful treasures that in reality had been found across numerous tombs, to secure his reputation.

Another important figure at this time, one who was far from unproblematic in his outlook, but whose work was perhaps better intentioned, was Augustus Henry Lane Fox Pitt Rivers. Pitt Rivers became interested in the development of the rifle during his military career and went on to amass a great collection of archaeological and ethnographic artefacts from around the world. He organised them in a way that drew on the evolutionary ideas of Charles Darwin, aiming to display the full evolution of weapons from the humble pointed stick to the rifles of his own time. His work was some of the earliest systematic and scientifically-minded archaeology, though many of his ideas are now outdated, often hinging on the false idea of superior and inferior or 'primitive' peoples. Although Pitt Rivers is also often credited with the important innovation of considering the stratigraphy (the chronology of archaeological sites identifiable by layers of sediment in the soil) of sites, this aspect was already being considered by archaeologists such as Christian Maclagan, Scotland's first female archaeologist, who also pioneered the meticulous recording of sculpted stones.

Some 19th-century archaeologists damaged more artefacts than they saved.

THE LURE OF EGYPT

It was around this time, too, that the Western world began to get interested in the remains of Ancient Egypt. Egyptomania truly took hold in Britain in 1922, after Howard Carter discovered Tutankhamun's tomb, but the history of Egyptology goes back much further than this. During a visit to Egypt for her journalistic work in 1873-4, Amelia Edwards saw the destruction of ancient monuments and decided to dedicate her life to their preservation and protection. Working with curators at the British Museum, Edwards founded the Egypt Exploration Fund (now the Egypt Exploration Society) and promoted the study of Ancient Egypt through talks, popular articles and the provision of funding opportunities for young researchers. One such researcher who benefitted from her work was Flinders Petrie, who is regarded as one of the great Egyptologists and

Amelia Edwards, one of the earliest Egyptologists

As time has progressed, so have excavation methods

Pitt Rivers founded the Pitt Rivers Museum in Oxford in 1884, donating his collection

The Egyptian Room in the British Museum, taken in December 1890

A replica of the Trojan Horse at the Troy archaeological site in Canakkale, Turkey

“Archaeology is now becoming a collaborative endeavour”

whose name remains on UCL’s Petrie Museum of Egyptian Archaeology (though some of the museum’s earliest collections were those donated by Edwards herself!).

Flinders and his wife, Hilda Petrie, went on to excavate widely throughout Egypt, developing new systematic approaches and furthering the cause of Egyptology. Although Petrie was a significant figure in developing the scientific method in archaeology, he was an avowed eugenicist and white supremacist who believed that the wonderful remains of Ancient Egypt were the result of a Caucasian group who conquered the ‘inferior natives’. While there was a great prevalence of similar ideas among Petrie’s contemporaries, these views were far from universal. It is important to remember the work of researchers such as Zelia Nuttall, an archaeologist who dedicated her life to studying the pre-Hispanic societies of Central America, fighting fervently against the characterisation of these people as savages and barbarians.

The history of archaeology in the 19th and early 20th centuries is tied up with uncomfortable ideas and views, which cannot be ignored, but the methods developed have enabled the discipline to grow and change.

THEN AND NOW

The rate of change in archaeology increased massively throughout the 20th century. From the treasure-hunting ethos of many late 19th-century archaeologists through to the more systematic approaches of people such as Dorothy Garrod, Tessa and Mortimer Wheeler, Kathleen Kenyon, Sylvia Benton, V Gordon Childe, Maria Antonina Czaplicka and O G S Crawford in the first half of the 20th century. These figures all contributed to the increasingly scientific approach that archaeologists were taking both to the excavation and recording of sites, and also to how the information that was discovered was interpreted.

New technologies including powered flight, carbon dating and flotation (a process to identify tiny artefacts and plant remains) were developed during this time, and each added more ways to gain detailed and comprehensive information that pushed archaeology towards the more scientific methods that are used today.

Archaeologists now have more ways of studying the past than ever before, using technologies from LiDAR (a way of identifying buried remains), isotope analysis, and GPS recording of individual artefacts, through to photogrammetry (the process of creating 3D images of things and sites), X-Ray Fluorescence and MRI scanning. These enable us to learn more about the ancient world while minimising the damage done, preserving the remains for future generations.

More than ever, archaeology is now becoming a collaborative endeavour, using both the more scientific approaches we have seen as well as recognising the importance of indigenous and local knowledge and histories. It is an exciting time for archaeology, with new information being discovered all the time, old assumptions being overturned, and an ever-clearer picture of the ancient world becoming available to everyone.

Heritage HEROES

From trailblazing historians to preservation pioneers, here are just a few of the ladies and gentlemen who have helped shape archaeology into what we know today

> "One never loses the thrill of breaking past the surface and penetrating another world"
>
> - HONOR FROST -

There have always been important figures who were captivated by the civilisations that came before us and saw the importance of remembering the cultures of our ancestors. Powerful figures like King Nabonidus of Babylon, Roman Emperor Augustus and St Helena of Constantinople planted the seeds of what would become modern archaeology, while Christian Jürgensen Thomsen, Luigi Palma di Cesnola, Christian Maclagan, Augustus Pitt Rivers and even Thomas Jefferson all shaped the profession.

Over the next few pages you will discover some of the most important figures in Western archaeology. These are the people who devoted their lives to digging up the past and preserving world heritage; who forged forward in the realms of science and technology, developing new techniques to ensure that we have a full and accurate understanding of the way people lived, what they ate and how they enjoyed themselves; and who pushed for political changes to help foster a culture of conservation and preservation that persists into the present day.

© Getty Images

Stonehenge held a lifelong fascination for Aubrey and his studies of it contributed greatly to our understanding of it today

MAKING A HERO

Witty biographies
The light-hearted tone of *Brief Lives* reveals Aubrey's easygoing manner and sense of humour.

Wiltshire expert
He concluded that the stone monuments of Wiltshire were the work of Druids, not Romans.

Posthumous fame
Aubrey only saw one of his works published in his lifetime: *Miscellanies Upon Various Subjects*.

Empirical pioneer
Aubrey was a pioneer of empiricism, the theory that all knowledge is acquired through the senses.

Royal Society
Aubrey was one of the early members of the Royal Society and supported it throughout his life.

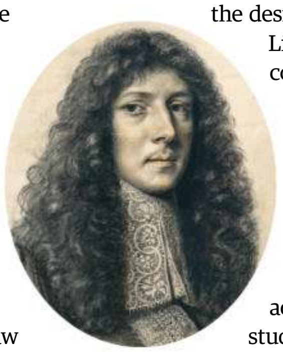
JOHN AUBREY

A champion of Avebury and Stonehenge

"I perform the function of a whetstone, which can make the iron sharp though is itself unable to cut." These words by Ancient Roman poet Horace were often used by John Aubrey to describe himself. It was a modest claim, as Aubrey wasn't just a leading gatherer and disseminator of scholarly and biographical information in late 17th century England. He was also a scientist, historian of architecture, pioneer of archaeology and antiquarianism, as well as the author of the celebrated book, *Brief Lives*, which so brilliantly captured the spirit of his age.

Aubrey was born in Easton Piercy, North Wiltshire, in 1626 to an affluent, land-owning family. Educated at a local grammar school, he entered Trinity College Oxford in 1642 to study law. Here, he was introduced to not only a wealth of knowledge, but some of the finest minds in the land. Aubrey met the greatest writers, scientists and political thinkers of his age: Samuel Pepys, Robert Hooke, Thomas Hobbes and Christopher Wren, to name a few.

He was well-acquainted enough with Charles II to show him the Aubrey Holes at Stonehenge, a ring of 56 chalk pits that Aubrey had first recorded and which are named after him. He had discovered them during studies at the site, and was the only expert to consider their existence until centuries later, when, in 1920, Colonel William Hawley uncovered more of the chalk pits that Aubrey had found. The pits added to potential theories about the use of the site – were they dug to support wooden posts? Or perhaps they acted as an astronomical indicator? The theories endure, thanks to Aubrey's work.



In 1648, Aubrey began what would be one of his most important studies, by pure chance. While out hunting with friends in Avebury, he saw for the first time the Avebury stones, which he had not heard of before. Their inclusion in *Aubrey's Monumenta Britannica* has provided vital information for later studies of the site.

Between 1669 and 1696, Aubrey wrote dozens of biographies of the great and the good who had helped shape the period he lived in. The reams of manuscripts and letters he left behind also include meticulous records of buildings, ancient sites and natural features, which he would not just write about but draw, too. In the process, he bequeathed insights to archaeologists and antiquarians showing, for example, how to date a building by the design and construction of its windows.

Like the biographies, which were collated after his death into *Brief Lives*, many of these manuscripts were later edited into in-depth studies. These works included *The Natural History of Wiltshire*, *A Perambulation of the County of Surrey* and the *Monumenta Britannica*; the latter is widely considered to be his greatest achievement and the cornerstone for studies into British archaeology.

At the time Aubrey's writing was often criticised for trivialising the lives of great men. But Aubrey – whose works are full of 18th-century wit and wisdom – insisted that he wanted to record "the naked and plaine trueth, which is here exposed so bare". By the time he died in 1697 he'd left behind a vast body of work that exposed the plain truth not just about his biographical subjects, but a great deal more besides.

AUGUSTE MARIETTE The father of Egyptian archaeology

It was in poignant circumstances that Auguste Mariette discovered a passion for Egyptology. The 21-year-old teacher already had an interest in history when his cousin, Nestor L'Hote, died in 1842 and Mariette was tasked with wading through his papers. L'Hote was an artist who had travelled extensively in Egypt, and the hundreds of sketches and drawings he made inspired Mariette to find out more about the civilisation of the pharaohs.

Using L'Hote's sketches, Mariette devoted himself to the study of hieroglyphics and the Coptic language. Within five years, he had produced a catalogue of the Egyptian Gallery in the Boulogne Museum, which drew the attention of experts and helped him get a job at the Louvre in 1849.

The following year, Mariette was sent to Egypt on a mission to purchase ancient manuscripts to add to the Louvre collections. However, Mariette met with little success. Expecting to return home empty-handed and trying to not waste what he thought would be his only trip to Egypt – surely the Louvre would not send him again, given his failure – Mariette visited many of Egypt's ancient sites.

It was on one of these trips, to the step pyramid of Djoser at Saqqara, that Mariette noticed a statue of a sphinx peeking out from the sands. Gathering 30 workmen to investigate further, the sand was cleared away to reveal an avenue of sphinxes leading to the Serapeum temple complex. After clearing the entrance to the temple with explosives, Mariette found catacombs holding a collection of mummified bulls, thousands of statues, bronze tablets and other treasures dedicated to Apis, the god of strength and fertility.

His superiors at the Louvre asked Mariette to remain in Egypt and continue his research; his original mission to secure manuscripts was long forgotten. Mariette remained in Egypt for four years, clearing more of the site at Saqqara and despatching 230 crates of finds to Paris.

On his eventual return to the French capital, Mariette found that life in the storerooms and galleries of the Louvre no longer suited him. Within a year he was back in Egypt, this time working directly for the Egyptian government, heading up a new antiquities department as conservator of Egyptian monuments. Mariette continued to excavate at Saqqara, but now had a wider remit and oversaw the exploration of many other sites, including Giza and Karnak in 1860 alone. Mariette supervised 35 new excavations while continuing at existing ones.

In a move unusual for the time, Mariette also encouraged Egypt to take control of its own heritage. This was a period in which Egyptian artefacts were usually removed from the country to be displayed in European museums. Mariette restricted unauthorised excavations and the sale of artefacts, and ensured that the government funded a new Egyptian Museum, providing a home for discoveries in Egypt.

On Mariette's death in 1881, his body was sealed in a sarcophagus and placed in the garden of the Egyptian Museum, the place where so many of the treasures he discovered are displayed. It was a fitting resting place for the man who reclaimed Egyptology for Egypt.

MAKING A HERO

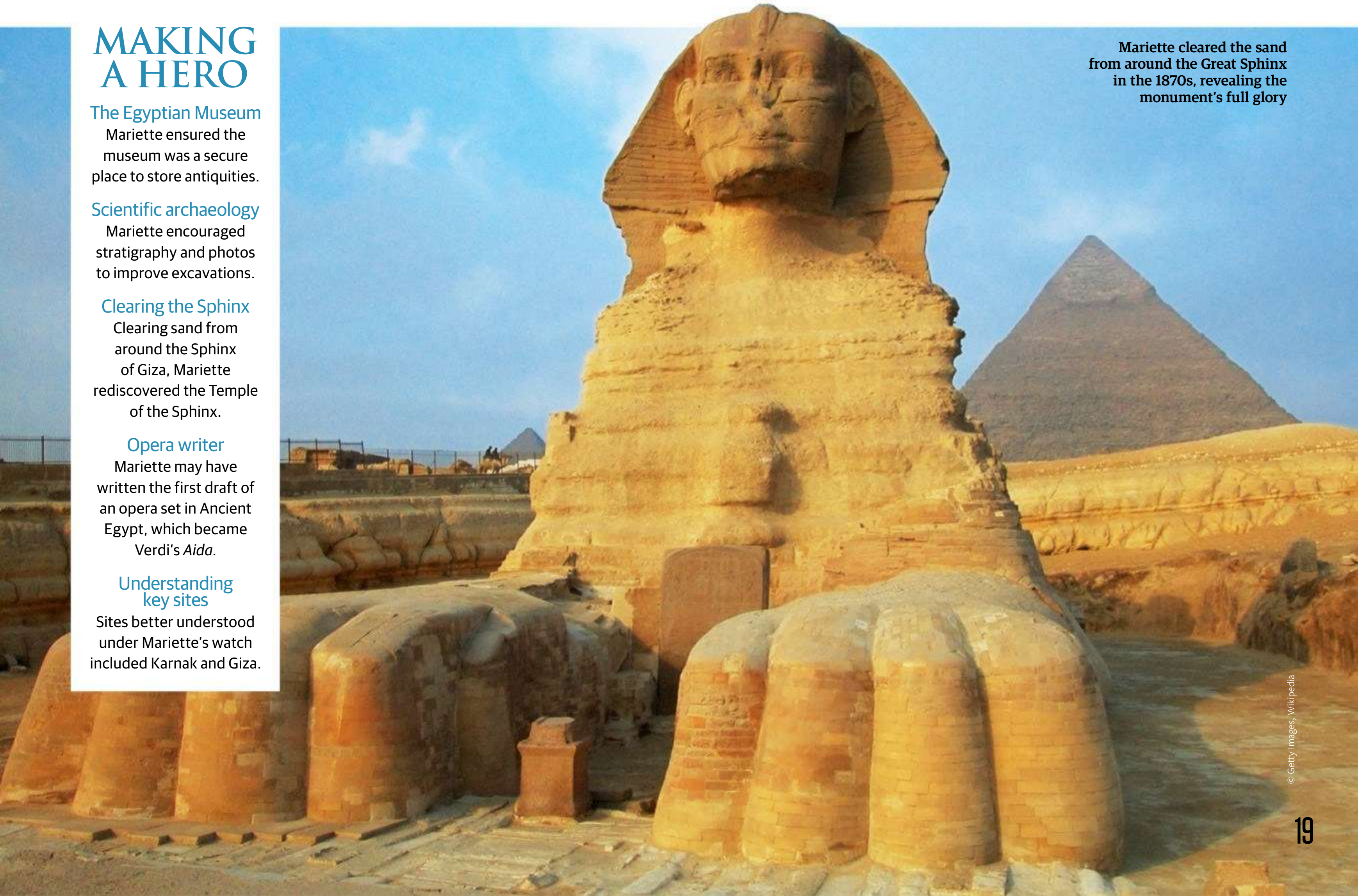
The Egyptian Museum
Mariette ensured the museum was a secure place to store antiquities.

Scientific archaeology
Mariette encouraged stratigraphy and photos to improve excavations.

Clearing the Sphinx
Clearing sand from around the Sphinx of Giza, Mariette rediscovered the Temple of the Sphinx.

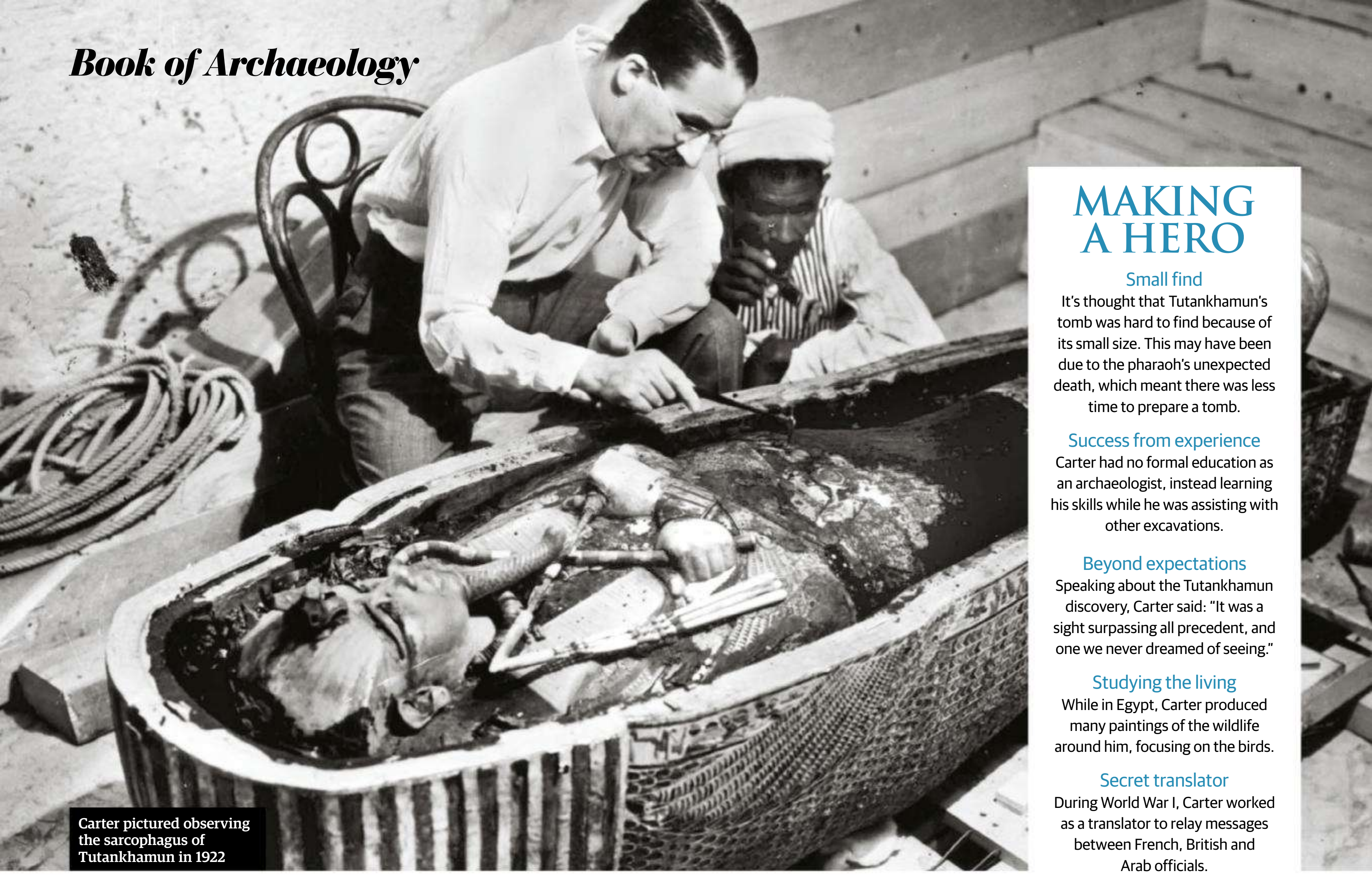
Opera writer
Mariette may have written the first draft of an opera set in Ancient Egypt, which became Verdi's *Aida*.

Understanding key sites
Sites better understood under Mariette's watch included Karnak and Giza.



Mariette cleared the sand from around the Great Sphinx in the 1870s, revealing the monument's full glory

© Getty Images, Wikipedia



Carter pictured observing the sarcophagus of Tutankhamun in 1922

MAKING A HERO

Small find

It's thought that Tutankhamun's tomb was hard to find because of its small size. This may have been due to the pharaoh's unexpected death, which meant there was less time to prepare a tomb.

Success from experience

Carter had no formal education as an archaeologist, instead learning his skills while he was assisting with other excavations.

Beyond expectations

Speaking about the Tutankhamun discovery, Carter said: "It was a sight surpassing all precedent, and one we never dreamed of seeing."

Studying the living

While in Egypt, Carter produced many paintings of the wildlife around him, focusing on the birds.

Secret translator

During World War I, Carter worked as a translator to relay messages between French, British and Arab officials.

HOWARD CARTER

This archaeologist shot to worldwide renown when he discovered the tomb of the Egyptian pharaoh Tutankhamun

The discovery of the tomb of ancient Egyptian pharaoh Tutankhamun was made more famous because it was so well hidden, untouched by grave robbers and archaeologists for thousands of years. When it was unearthed in 1922, the mummified body and its decorated sarcophagus emerged fully intact. Many ancient tombs were uncovered in Egypt in the 20th century, but Tutankhamun's remains and treasures were the only ones that were able to be excavated in their entirety.

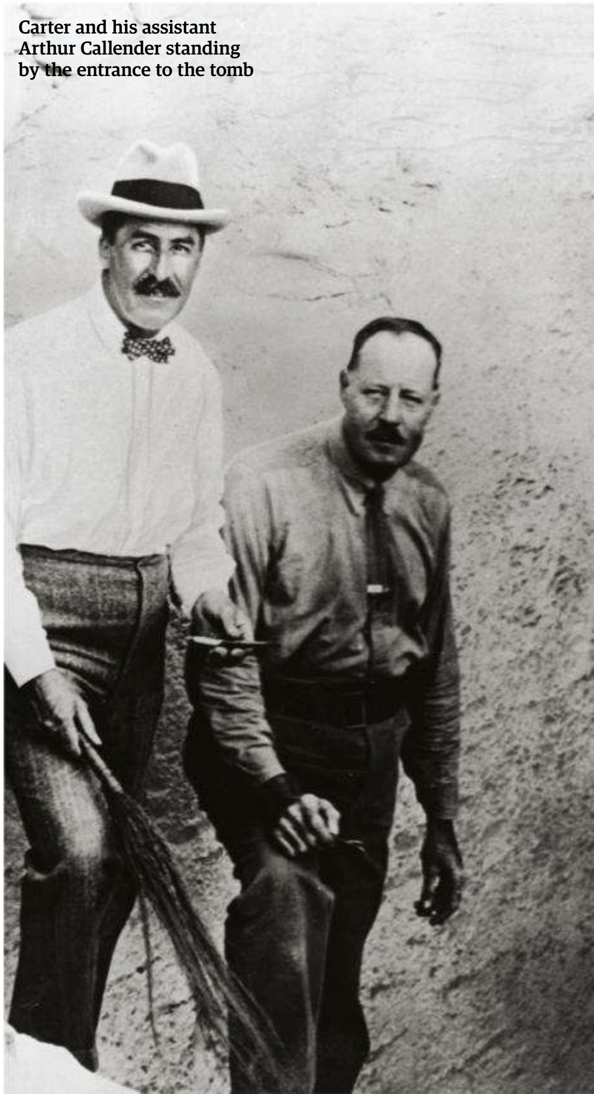
Tutankhamun was a young pharaoh who ruled ancient Egypt for just a single decade, until around 1324 BCE. Howard Carter, the archaeologist who led the excavation of Tutankhamun's tomb, searched the landscape of Egypt for three decades before he found the pharaoh's final resting place.

Carter's career began in a wholly unlikely place, following the legacy of his artist father, Samuel John Carter, and developing an early talent for drawing and art. His father, who helped homeschool Carter, would often paint portraits of Egyptologists. As a result, and during his teenage years especially, Carter became intrigued by Egypt and the country's history - the first trip he made outside of England was to Alexandria, Egypt. By combining his artistic talents with his interest in Egyptology, Carter recreated the artwork that was discovered in the tombs of Middle Egypt.

Some of the famous sites he visited, shadowing famous archaeologists, include Edfu, Thebes, and Abu Simbel.

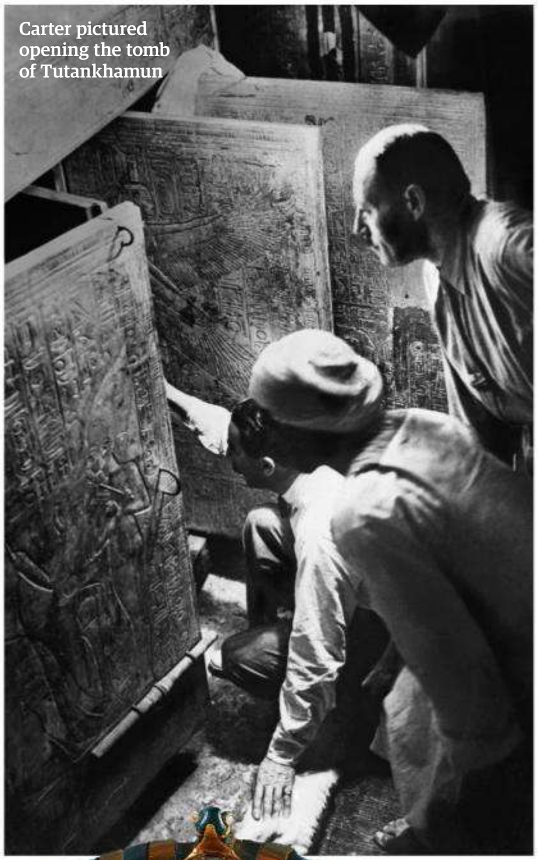
His experiences in Egypt, which included working with renowned archaeologist William Flinders Petrie, helped him build upon his archaeological skills. Petrie wasn't greatly impressed by the youngster's excavation abilities, but Carter insisted on perfecting his restoration techniques.

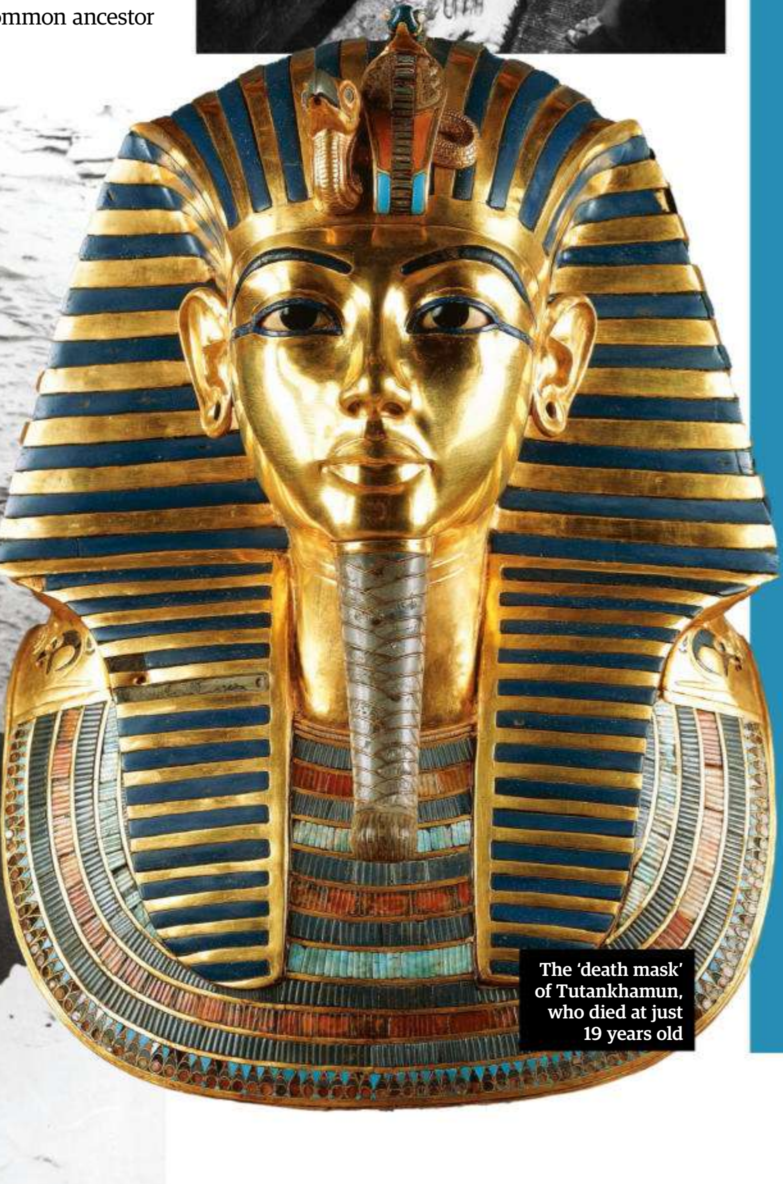
Carter and his assistant Arthur Callender standing by the entrance to the tomb



Someone who saw further potential in the young archaeologist was a wealthy English aristocrat called Lord Carnarvon. With a similar interest in the whereabouts of the mysterious Tutankhamun's tomb, Carnarvon sent Carter on his most ambitious – yet rewarding – mission. Eight years after Carnarvon granted Carter a licence to dig at the site where Tutankhamun's body was believed to lie, Carter and his team came across a large stone. When they moved the stone and searched below, they discovered a series of secret steps. These led to a mud-plastered doorway and the entrance to Tutankhamun's chamber. Among the tomb's tributes – gold jewellery, statues and boat ornaments that represented the journey to the afterlife – the DNA Carter discovered later helped identify other Egyptian mummies.

When Tutankhamun was discovered, DNA analysis didn't yet exist. But in 2010, following advancements in DNA profiling, his family's remains were matched with his reconstructed genetic information. Two previously anonymous mummies were found to be Tutankhamun's parents, while pharaoh Amenhotep III and Queen Tiye were discovered to be his grandparents. During a study of Tutankhamun's DNA, scientists in Switzerland deduced that over half of all Western European men share a common ancestor with Tutankhamun.


Carter pictured opening the tomb of Tutankhamun


The 'death mask' of Tutankhamun, who died at just 19 years old

A LIFE'S WORK

How did an artist become one of the world's most acclaimed archaeologists?

1874
On 9 May, Carter was born in London. He was the youngest of 11 children.

1874-91
Due to being a 'sickly child', Carter lived with his aunt in Norfolk in his early years.

1891
At 17 he got a job as a tracer, drawing pictures of artefacts and other findings.

1892
After a year as a trainee tracer, Carter began working with Egyptologist Flinders Petrie.

1899
Carter became an inspector of monuments for Upper Egypt.

1907
He met archaeologist Lord Carnarvon and they began excavating together.

1914
The Egyptian Antiquities Service gave Carter and Carnarvon permission to dig in the Valley of the Kings.

1917-22
Carter convinced Carnarvon to fund the search for Tutankhamun's tomb.

1923
A year after the tomb's discovery, Carter wrote about the findings in three volumes.

1939
On 2 March, Carter passed away at age 64 in London.

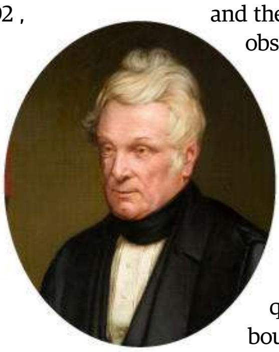
© Getty Images, Wikipedia

JOHN CLAYTON

The man that kept Hadrian's Wall standing

John Clayton is a name connected to one of the most well-known and beloved sites of English heritage, yet he is, on the whole, an unsung hero. However, Clayton remains, to this day, one of the most important figures in the history of Hadrian's Wall.

Born in Newcastle upon Tyne in 1792 , Clayton was thrust into the world of politics and business from an early age, as his father, Nathaniel Clayton, served as town clerk. His childhood was typical for an upper-class boy: he was classically educated at Uppingham and went straight into the family business, working in their solicitors firm. He qualified as an attorney and followed in his father's footsteps by becoming under-sheriff, then a few years later, town clerk in 1822. It was an entirely set out, planned and structured upbringing, designed almost entirely for the son's life to replicate the father's.



However, there was something unique about Clayton's life that would see him make astounding contributions to British archaeology. When Nathaniel was landscaping their home, he levelled out much of the Roman fort of Chesters, and in the process amassed a great deal of antiquities. Nathaniel wasn't particularly interested in the history of the antiques he had unearthed, but his son was absolutely fascinated with the finds, and these discoveries sparked a lifelong obsession with archaeology.

Clayton was alive at a time when the growing Industrial Revolution meant that stone to build factories, mines and mills was in high demand. Hadrian's Wall provided ample material for this – however, the town clerk had other plans. As the site began to be quarried and large quantities of stone removed, Clayton bought his first piece of land containing sections of Hadrian's Wall. But he did not wish to sell the stones, he wanted to save, preserve and study them. Whenever an estate containing portions of the wall entered the market, Clayton moved in quickly, securing a sale and bringing the precious sections of the wall under his protection, keeping them safe from vandalism. This was at a time when archaeology and excavation was not widely understood and industry ruled the nation, however Clayton forbade the use of the precious Roman stones for new structures, and moved many buildings away from the sites. He was a one-man army, working tirelessly to preserve, what was to others, a collection of old rocks.

Clayton was not only concerned with saving the stones but also learning more about them. He organised many pioneering excavations and, in 1848, discovered a gateway to the north that completely changed the perception that the wall was there to keep 'barbarians' out. Clayton continued right until his death, discovering the stunning sculptures of the temple to Mars Thincsus in his 90s.

Through his excavations, Clayton amassed an impressive collection, with over 5,500 items from a variety of sites. Although it began as a personal passion, his work soon attracted interest and his collection was displayed at the estate. This drew other enthusiasts to Chesters, and it was set up as an archaeological site, drawing some of the first tourists to Hadrian's Wall. Clayton's life's work can be seen in a museum at Chesters.

MAKING A HERO

Protecting the wall
Clayton's hard work made sure that Hadrian's Wall was preserved when it was at risk of destruction.

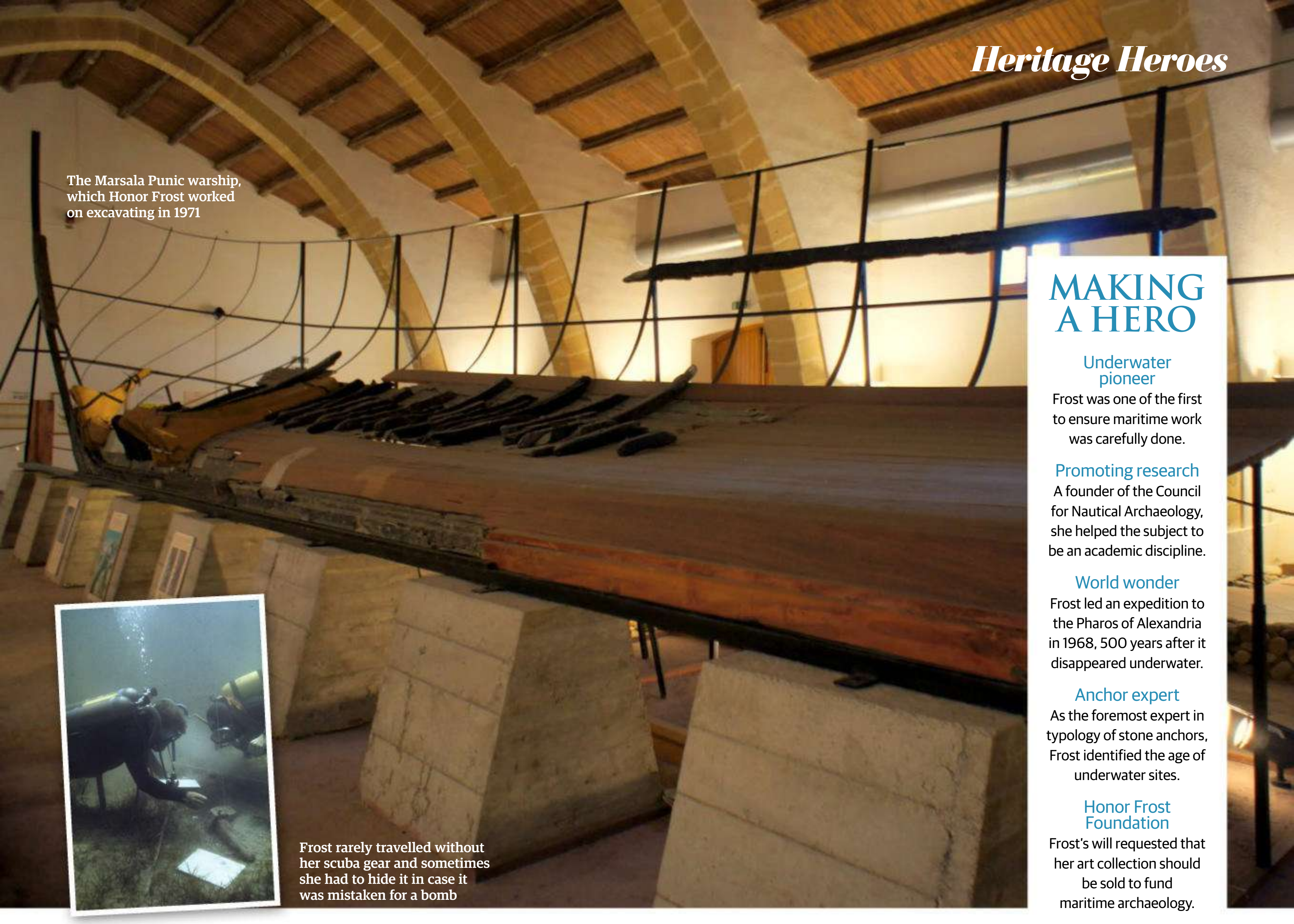
Key excavations
He excavated Castle Nick, Cawfields, Housesteads Crags, Housesteads and Carvoran, and also at Chesters.

Guardian of forts
He owned most of Hadrian's Wall as well as five forts placed along it that can still be visited.

Town clerk
He inherited his father's position of town clerk in 1822 and served in the role for 45 years.

Neoclassical style
He helped transform the centre of Newcastle in the Neoclassical style, using his influence on the council.

Hadrian's Wall, in the state we see it today, is John Clayton's heritage legacy



The Marsala Punic warship, which Honor Frost worked on excavating in 1971

Frost rarely travelled without her scuba gear and sometimes she had to hide it in case it was mistaken for a bomb

MAKING A HERO

Underwater pioneer

Frost was one of the first to ensure maritime work was carefully done.

Promoting research

A founder of the Council for Nautical Archaeology, she helped the subject to be an academic discipline.

World wonder

Frost led an expedition to the Pharos of Alexandria in 1968, 500 years after it disappeared underwater.

Anchor expert

As the foremost expert in typology of stone anchors, Frost identified the age of underwater sites.

Honor Frost Foundation

Frost's will requested that her art collection should be sold to fund maritime archaeology.

HONOR FROST A pioneer of underwater archaeology

Honor Frost's first foray into underwater exploration came in rather bizarre circumstances, during a party in a friend's snow-covered garden in Wimbledon. She was persuaded to climb into a well wearing a World War II diving suit; a hand pump supplied air through a hose. Even in the confines of the well, she was amazed by what she saw: "Air bubbles, like quicksilver, adhered to the undercut surfaces".

Frost, born in Cyprus in 1917, was hooked by the feeling of freedom she had underwater and continued diving with a club in Cannes, learning to use new scuba equipment that did not require an external air supply. There, she met Frédéric Dumas, a friend of Jacques Cousteau, who introduced her to underwater archaeology. Together they explored the wreck of a Roman ship lying off the French south coast at Anthéor. However, Frost later regretted that, "there was a sad lack of archaeological guidance". It was little more than photographic treasure hunting, with little effort to record the site for posterity.

Drawing on the skilled draughtsmanship she had learned at art school, in 1957 Frost reported for work at an archaeological excavation near Jericho. Though she found the process of excavating on dry land to be, "not entirely enjoyable", Frost was struck by the contrast between the careful and diligent investigation of Jericho's tombs and the gung-ho exploration she had undertaken on the Roman ship. The experience convinced her of the importance of methodical digging and recording results in meticulously detailed plans. Frost began to excavate underwater sites in the Eastern Mediterranean with as much accuracy as a land excavation.

The first site to benefit from this approach was a wreck off the coast of Turkey at Gelidonya, which Frost worked on under the direction of George Bass, another pioneer in the world of underwater archaeology. The wreck was not Mycenaean as previously thought, but Phoenician – the first ever found. This excavation rewrote the history of Bronze Age seafaring in the Mediterranean and showed that underwater archaeology was no longer the poor relation lagging decades behind land-based archaeology.

In 1971, Frost was appointed to direct the excavation of a wooden hull protruding from the sands of Marsala Harbour in Sicily. After years of dedicated work, it was discovered that the timbers were from a warship used by Carthage at the end of the First Punic War with Rome – the oldest war galley to be excavated. Frost concluded that the warship had sunk after being rammed by the Romans and among the items found were traces of marijuana stems.

She also explored ancient harbours in Lebanon and Syria to plot trade patterns among the earliest civilisations and developed an interest in stone anchors. Frost even confirmed the existence of the Lighthouse of Alexandria, one of the Seven Wonders of the Ancient World. .

Active until the end, even after two hip replacements, Frost died at the age of 92 in 2010 while planning a trip to India to examine stone anchors. Even in her twilight years, she was determined to further our understanding of the world through maritime archaeology.

© Alamy, Honor Frost Foundation, Wikipedia

Hetty Goldman's last excavation took place at the historic city of Tarsus, Turkey

MAKING A HERO

Highest honour
She was awarded the Gold Medal for Distinguished Archaeological Achievement.

Original research
Her work changed our understanding of prehistoric Greece and Turkey.

Humanitarian
Goldman used her position to sponsor many German refugees who were fleeing the Nazis.

Trailblazer
By mentoring female archaeologists, she played a critical part in opening the field for women.

Comprehensive reports
Goldman's results and the reports on her excavations are still used today.

HETTY GOLDMAN

Breaking ground for women in archaeology

Hetty Goldman was born into a famous Wall Street family – her grandfather was the founder of finance company Goldman Sachs – but she found herself drawn to the pursuit of the past rather than chasing after the dollar. After graduating from Pennsylvania's Bryn Mawr College with majors in Greek and English, she considered a career in writing, but found that she had, "as yet, nothing to say".

Goldman began to find her vocation, though, after taking a three-month tour of archaeological sites in Italy in 1906. She was inspired to continue studying and her masters thesis on Greek vase painting won her a fellowship to the American School of Classical Studies at Athens in 1910, the first time it had been awarded to a woman.

Goldman was now convinced her future lay in archaeology. Her first excavation was with fellow graduate Alice Leslie Walker at Halae in Greece. Together they uncovered a small sanctuary of Athena, but it was the underlying prehistoric village that spurred Goldman's lifelong interest in the pre-Classical world.

Conflict was a misfortune that would halt Goldman's work with frustrating regularity. The Balkan Wars of 1912-13 and then World War I interrupted the excavations at Halae; during both conflicts, Goldman volunteered as a nurse. In 1922, work at Goldman's second major excavation, Colophon in western Turkey, had to stop after only ten weeks because of the Greco-Turkish War. When the team returned, most of the antiquities they had uncovered had been stolen.

The only one of Goldman's major excavations that wasn't interrupted by war was a dig she carried out on an unusual mound in Boeotia. Goldman spotted its potential on one of her first trips to Greece in 1911, but it wasn't until 13 years later that she finally got permission to pull back the soil. Over the next three years, she uncovered the town of Eutresis, making important discoveries that shed valuable new light on the Bronze Age in Greece.

Goldman's final excavation was at Tarsus in Turkey, seeking prehistoric links between Greece and Anatolia, a project that began in 1935 and was completed in 1947. When World War II brought that dig to a temporary halt, Goldman had no option but to stay at her desk at the Institute of Advanced Study at Princeton. She had joined the prestigious research centre in 1936, with the understanding that she would spend half her time in the field. Goldman's energy was legendary and the long war years dragged for a woman who was used to directing her trenches from dawn to dusk.

Goldman retired in 1947 but continued to analyse the results of the Tarsus excavations for years afterwards, finally completing her work with the publication of a third volume in 1963. She died nine years later at the age of 90. Goldman's methodical excavations, comprehensive reports and original research sealed her reputation as an archaeologist to be admired, but considering that she was a woman in what was still a man's world – Goldman's excavation at Halae may have been the first dig on the Greek mainland directed by a woman – her achievements are magnified. She truly broke new ground.

© Alamy, Bryn Mawr College

15 MORE NAMES YOU NEED TO KNOW!

These archaeologists and archaeology advocates changed how we think about history

Flavio Biondo

Italian historian (1392-1463)

Biondo's claim to fame was his creation of the three-period division of Ancient, Medieval, and Modern, terms we still use today (even if they are rather more refined).

Christian Jürgensen Thomsen

Danish antiquarian (1788-1865)

Thomsen's great innovation was the creation of the Three-Age System (Stone Age; Bronze Age; Iron Age), believing that each age was best defined by its favoured cutting material.

Christian Maclagan

Scottish antiquarian, archaeologist and suffragist (1811-1901)

Although Pitt Rivers is often credited with the development of new methods for stratigraphic excavation in the 19th century, Maclagan had actually published similar new ideas five years earlier. She dedicated her life to the preservation and research of the prehistory of Scotland and took detailed rubbings of numerous carved stones and Celtic crosses.

Augustus Henry Lane Fox Pitt Rivers

British army officer and antiquarian (1827-1900)

Pitt Rivers, whose collection formed the museum of the same name in Oxford, innovated new ideas about the development of tools and weapons. He applied the evolutionary ideas of Charles Darwin and Herbert Spencer to archaeological and ethnographic objects, arranging them in new ways, organised by type rather than region or time period.

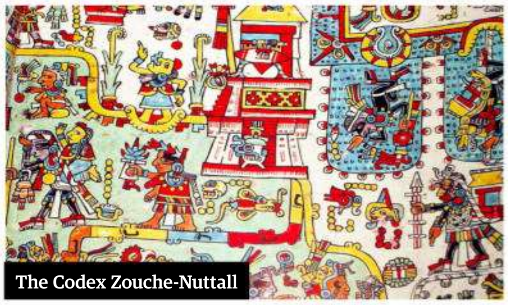
Arthur Evans

British archaeologist (1851-1941)

Evans is one of the most eminent researchers of the Aegean Bronze Age, having discovered the remains of the famed Palace of Knossos on Crete, identified the Minoan Civilisation as distinct from the Mycenaeans, and defined the Cretan scripts of Linear A and B.

© Alamy, Getty Images, Wikipedia

Palace of Knossos, Crete



The Codex Zouche-Nuttall

Zelia Nuttall

American archaeologist and socialite (1857-1933)

Nuttall was one of the first and most influential archaeologists to study Prehispanic Mexico. She specialised in tracing and identifying pre-Columbian manuscripts and campaigned tirelessly to overturn the prevailing understanding of the people of ancient Mexico as savages or barbarians.

Gertrude Bell

British writer, political officer and archaeologist (1868-1926)

An influential presence in world politics as well as archaeology, Bell travelled throughout the Middle East and was a key figure in the creation of new boundaries and territories in the region after World War I. In 1922, she was appointed director of antiquities for Iraq.

Hilda and Flinders Petrie

British Egyptologists (1871-1956/1853-1942)

Hilda and Flinders Petrie were passionate and tireless Egyptologists, excavating some of the most important sites in Egypt and developing new methods of systematic excavation and a way of dating layers of earth based on the ceramic material found in them.

O G S Crawford

British archaeologist (1886-1957)

In 1920, after the end of World War I, Crawford was employed by Ordnance Survey to tour Britain and identify archaeological sites. He realised that the view from aeroplanes was the best way to identify new sites, and his pioneering work in aerial photography had huge significance for the future of archaeology in Britain.

Katharine and Leonard Woolley

British archaeologists (1888-1945/1880-1960)

The Woolleys are often regarded as some of the first truly methodical archaeologists, who excavated the ancient Royal City of Ur.

Dorothy Garrod – professor of Archaeology at Cambridge 1939

Dorothy Garrod

British archaeologist (1892-1968)

Not only was Garrod a prolific and innovative archaeologist and Palaeolithic specialist, but she was the first woman to be appointed professor at Oxford or Cambridge in any subject when she was made professor of archaeology at Cambridge in 1939.

Tessa and Mortimer Wheeler

British-South African and British archaeologists (1893-1936/1890-1976)

The Wheelers, an archaeological power couple, developed the revolutionary Wheeler Method, digging in grid squares to leave sections of the sites intact, allowing them to identify sequential layers. Together they founded UCL's Institute of Archaeology.

Kathleen Kenyon

British archaeologist (1906-78)

Born in the Director's House in the British Museum, Kenyon was destined to revolutionise archaeology. After being mentored by Tessa Wheeler, she went on to excavate the ancient city of Jericho and refine the Wheelers' excavation methods.

Mary and Louis Leakey

British palaeoanthropologists (1913-96/1903-72)

The Leakeys changed the entire story of human evolution through their work at Olduvai Gorge. They discovered fossils of over 60 hominins (early humans) and revolutionised our understanding of early humanity.

Zheng Zhenxiang

Chinese archaeologist (1929-)

Zheng Zhenxiang was not only the first female archaeologist in New China, but proved the existence of the famous Bronze Age military leader, priestess and wife of Shang Dynasty King Wu Ding, Lady Fu Hao.

Statue of Lady Fu Hao

The SCIENCE and TECHNOLOGY of Archaeology

Discover how modern archaeology employs a wide range of scientific methods and groundbreaking technology to uncover the past and decipher its mysteries

Written by Philip S Kay

Archaeology has come a long way since its earliest days. Over the years, it has evolved from its simple treasure-hunting roots into a specialised field of study that utilises state-of-the-art technologies and techniques to provide us with new knowledge about the past. Today, archaeologists have access to a broad array of cutting-edge tech during all stages of the archaeological process – from site surveying and excavation, through to the analysis, interpretation and conservation of finds.

Although some scientific methods have been invented or developed specifically to uncover and learn about the past, archaeology has also borrowed and adapted technologies from various other disciplines. On any given project, archaeologists may find themselves working alongside experts from a number of diverse fields, ranging from geologists and biologists to computer scientists and chemists – each an authority in their own area of expertise. Combining knowledge and skills, these specialists use their tools and techniques to add new pieces to the jigsaw puzzle of the past, and reveal more than has ever been possible.

> Archaeology is bolstered by the tech of other disciplines

SEARCHING FOR SITES

A hundred years ago, an archaeologist might have had to trek through inhospitable terrain for days or weeks, just to locate and identify a site of interest, relying on nothing more than outdated historical maps and the stories of locals, in the hope that they would lead them to hidden ruins or other features buried beneath the earth. However, thanks to science and revolutionary advances in remote-sensing technology, satellite imagery and geophysics, these days the same task can be accomplished in a much shorter time – and with a lot less hardship. Although archaeologists still make use of documentary sources and traditional surface survey methods, such as fieldwalking, they now have a much greater technological arsenal at their disposal than ever before.

Aerial photography is a tool that archaeologists have been using for decades, but its applications have expanded over time to enable them to analyse landscapes, features and the relationships between them in more detail. Images captured from above can help experts spot anomalies that don't usually occur in nature, such as straight lines, perfect circles and other geometric shapes, which might indicate past human activity. Some underground features cause variations in the depth of soil, resulting in curious patterns of vegetation growth. To the trained eye, these are clues that give away the location of sites invisible from ground level. Today, aerial photography is often used together with newer instruments, like satellites, to collect more data.

After excavation, artefacts are moved to the lab where experts employ a variety of advanced techniques to analyse and interpret them

Aerial imagery enable archaeologists to spot quirks in the land

© Alamy, Getty Images

Archaeologists reveal the secrets of an ancient Egyptian mummy utilising cutting-edge CT scanning technology borrowed from medical science

> “The most significant development of recent years is laser imaging, detection, and ranging technology (LiDAR)”

Remote-sensing methods, including multi-spectral imaging, which allows observers to see different parts of the electromagnetic spectrum (such as infrared), also play an important role in the identification of sites.

The most significant development of recent years is laser imaging, detection, and ranging technology (LiDAR). This futuristic method has revolutionised the way archaeologists scan areas of interest. Using LiDAR, specialists can map sites and features in 3D. They do this by calculating distances, after measuring how long it takes light to bounce back to a receiver from a surface or object pinpointed by a laser. This mind-blowing tech has been employed all over the world to reveal some astounding things (see boxout for more). In the jungle-covered regions of Central America alone, it has led to the discovery of many structures thought to have been built by the ancient Maya. Exciting finds like these tell us that the ruins we already know about probably make up only a small percentage of those that continue to remain hidden.

WHAT LIES BENEATH?

Underwater sites and artefacts lie at even greater depths, requiring marine archaeologists to use instruments like sonar scanners and sonic pulse emitters to search beneath the waves. This technology has played a crucial role in the detection of famous shipwrecks, such as that of Henry VIII's flagship, the Mary Rose. Land-based archaeologists utilise apparatus first developed for geophysics, to measure the electrical resistance of soil and detect discrepancies in Earth's magnetic field, which can help them highlight important features. When they have finished their surveys, archaeologists can start excavating a site using a set of special tools and techniques to uncover, record and catalogue whatever they find (see boxout for more). Taking a methodical step-by-step approach, they unveil buried features and bring long-lost artefacts back from the past, to be seen by human eyes once again.

Finding out the age of anything unearthed during the course of an excavation is critical, as dating artefacts helps establish the chronology of a site, enabling archaeologists to piece together not only what happened, but when and in what order. Sometimes, the approximate age of an object can be determined by the layer of material (stratum) in which it is discovered, but there are a host of scientific methods to lend aid, many of which have been refined over time to give more accurate results. The most influential of these is

SOMATOM Force

radiocarbon dating. Proposed by Professor Willard F Libby in 1946 – who later went on to receive the Nobel Prize for his work – radiocarbon dating was the single most important development in the field of archaeology of the 20th century; it completely changed the way that archaeologists worked, enabling them to calculate the age of organic material from all over the world, by measuring the amount of radioactive isotope carbon-14 within.

Despite its impact, radiocarbon dating does have some shortcomings: it has a limited range of about 50,000 years and does not work on inorganic matter. Fortunately, archaeologists can turn to other high-tech solutions to address these. Thermoluminescence dating can reveal the age of pottery and other inorganic artefacts like flint tools. Geologists can apply the potassium-argon method to gather information on volcanic rocks that are millions of years old, and uranium-series and fission-track dating also let archaeologists see further back in time. One technique, called electron spin resonance, can be used on tooth

LiDAR:
A GAME CHANGER

This revolutionary technology has helped archaeologists make some stunning discoveries around the world

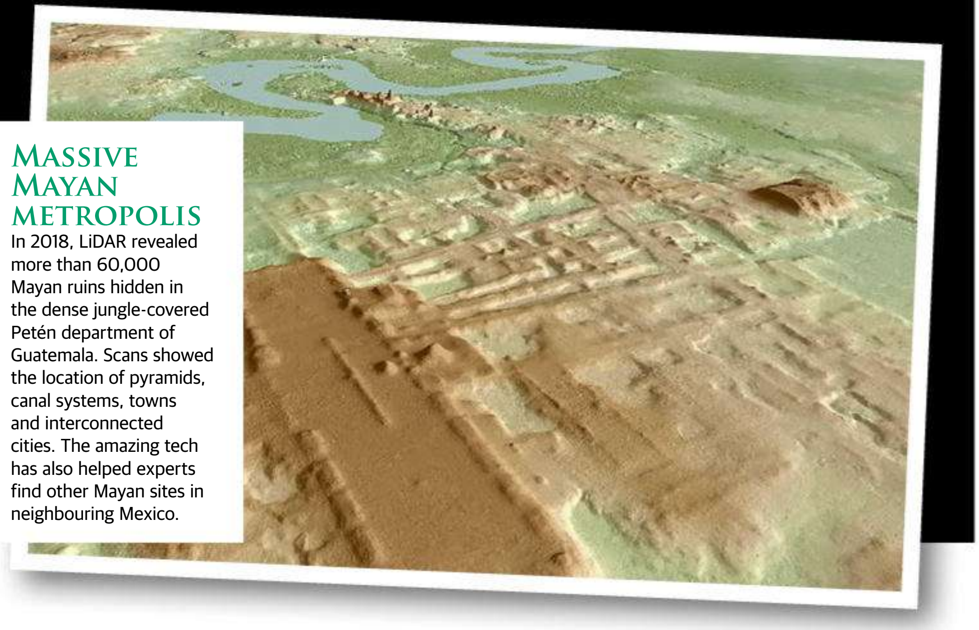
KHMER URBAN EXPANSION

Combined scanning and excavation data from projects at Angkor in Cambodia has led researchers to the conclusion that the region may have been home to up to 900,000 people in the 13th century. They used LiDAR to identify evidence of settlement mounds, helping them calculate urban development and population growth.

ROMAN ROAD
FOOTPATH

LOST ROMAN ROADS

In the United Kingdom, archaeologists were able to use publicly available data from the Environment Agency's LiDAR surveys to help map lost Roman roads and find out important new information about the conquest of northern England. Other roads built by the Romans have also been recently discovered in Devon and Cornwall.



MASSIVE MAYAN METROPOLIS

In 2018, LiDAR revealed more than 60,000 Mayan ruins hidden in the dense jungle-covered Petén department of Guatemala. Scans showed the location of pyramids, canal systems, towns and interconnected cities. The amazing tech has also helped experts find other Mayan sites in neighbouring Mexico.

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HOW TO EXCAVATE AN ARCHAEOLOGICAL SITE

These experts use patience, precision and problem-solving to retrieve history from the ground

The remains of ancient cities, people and their belongings are of great importance to historians. They can provide information about our ancestors and tell us how human behaviour has changed over time. Often the position of artefacts, along with their location and surroundings, can enable the archaeologists who excavate these sites to put the pieces together to discover the items' stories. Trained to know what to look for, these professionals understand how to uncover historic treasures while limiting any damage. Large groups of experts work together on a dig to analyse every grain of soil in the plot. But what steps do they need to take when unearthing a historically valuable site?

UNCOVERING HISTORY

Follow the eight essential steps for excavation

TOOLS TO USE

1 SURVEY THE SITE

Before digging, archaeologists record data about the area. Using dumpy levels, they measure the height of the land in relation to a fixed point. Using electromagnetic radiation, ground-penetrating radars can detect artefacts up to 15m (49ft) below the surface, informing members of the team about where to dig.

2 MAKE A GRID

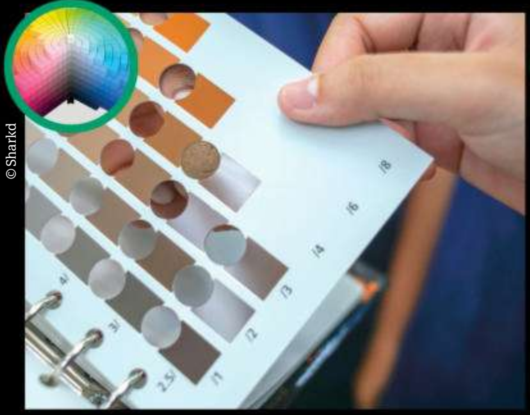
Sectioning the dig site into smaller squares makes it easier to record where each item was discovered and which objects were found together. Recording the position of artefacts in a grid is important for later analysis. Long measuring tapes are often used in order to measure these squares evenly and accurately.

3 DIG THE TOPSOIL

Digging is methodically executed. First the topsoil is explored. Using the side of a trowel, earth is evenly scraped away. Larger objects embedded deeper than ten centimetres (four inches) are left for later. Larger tools such as pickaxes can be used to break away harder soils, while shovels are needed to transfer any earth removed into a wheelbarrow for further inspection.

5 BAG THE ARTEFACTS

The recovered artefacts are placed into clear bags that are labelled with a unique code. This number allows those analysing it later on to know where it was located. Finds are often arranged by material so that they can be stored appropriately.



© Sharkd

6 CHECK THE SOIL LEVELS

The colour of the soil that the artefacts are found in can tell researchers a lot about the composition and history. Accurate recordings indicate possible burning of material, farming activities and organic matter. Munsell colour charts are often used to compare against a soil sample. Each specific colour is given a unique name based on its hue, shade and strength.

7 SIFT FOR SMALLER ITEMS

Skeletons, whole fossils and other large artefacts will be spotted as the layers of soil are removed from the ground. However, some tiny finds could be hidden within the soil. All layers analysed are poured through a large sieve called a sifting screen. This can reveal tiny molluscs, seeds and pollen.

enamel to help scientists figure out the age of human and animal remains.

DIGGING DEEPER

Science and technology can tell us much more than just the age of objects, though. It can also be used to shine a light on how people in the past lived and died. Human remains are a treasure trove of information. Closer inspection of teeth, and their pattern of wear, can prove useful in identifying eating habits, and measuring the amount of strontium – a metallic element they contain – can narrow down where someone lived. By taking advantage of DNA analysis, archaeologists can now trace family lineage and confirm links between groups of people, and they sometimes utilise medical technologies like CT scanning to conduct a more thorough examination of bones, mummies and other fragile objects. These sophisticated devices make signs of diseases, deformities and nutritional deficiencies easier to see, without having to undertake a damaging invasive procedure.

Protecting items for future generations is a vital part of the archaeological process. Those in bad condition, or that can't be taken away from a site, are given immediate attention, but most conservation takes place inside the laboratory, where specialists use various methods to clean, stabilise, repair and restore. Treatment depends on the material and state of preservation; water or solvent-based consolidants help safeguard items like bone and pottery, while some metal objects benefit from corrosion inhibitors like benzotriazole in the case of copper. Iron may be coated with tannic acid to deal with rust, and conservators sometimes apply special adhesives to create protective layers or repair items.

Once all the lab work is finished, artefacts might be moved to a museum for display – their final destination after leaving the excavation site. They owe much of their successful journeys to science, and to the highly skilled professionals who know how to make best use of its amazing techniques and technologies. In recent decades archaeology has made great strides, and as it continues to move forward things have never been more exciting. By fine-tuning existing methods, and developing new practical applications from breakthroughs in emerging fields, such as robotics and virtual reality, archaeologists are poised on the brink of even greater discoveries. What amazing sites will they find next, what hidden artefacts will they uncover within them and what fascinating facts will they reveal about local societies, past civilisations and our collective human history?

Medical tech provides answers without the need for invasive procedures that could damage artefacts

The two main types of archaeology are historic and prehistoric, with the latter looking for clues about undocumented history

© Alamy, Getty Images

4 RECOVER ANY FINDS

Some artefacts, such as ancient skeletons, can be extremely delicate. To uncover these remains safely, small tools such as brushes and dental picks can be used to remove thin layers of dirt without damaging the find. Cleaning the surface allows photographs to be taken to document the positions of the bones before removing them from the ground.

8 RECORD ALL PROGRESS

Keeping notes is essential, as once the artefacts have been moved from the site, analysis will rely on photographs and the details taken during the excavation. Field notes explain everything that was observed and any events that took place in each square of the grid during the dig. They also contain the writer's thoughts about the history of the site.

The Enduring Appeal of TREASURE HUNTING

Amateur history buffs and treasure hunters gave rise to archaeology, and they are still helping the cause in the form of metal detectorists

Written by Alice Pattillo

Andy Stone is convinced a royal Saxon ship burial is buried beneath the soil on a local farm in the small market town of Danebury, north Essex. Equipped with a metal detector, he enlists his pal, fellow member of Danebury Metal Detecting Club (DMDC) Lance, to search the farmland in hopes of uncovering the next Sutton Hoo. It may be the premise to the BAFTA award-winning comedy series *Detectorists*, but the passion for history and obsessive lust for knowledge shown by Mackenzie Crook's lovable character Andy (who later in the series qualifies as an archaeologist) reflects a wider community of devotees. Amateur treasure hunters formed the basis of what would become archaeology, and they are still aiding the profession with their often thankless quest to unearth the past.

The beauty of *Detectorist*s is that it shows metal detecting, and indeed archaeology, for the mundane, mostly fruitless hard work it is. Searching for the next Staffordshire Hoard - or if you are particularly ambitious, the Holy Grail - is nothing like *Indiana Jones* or *Tomb Raider*. There are no great adventures through intricately designed Knights Templar booby traps, no mythical supernatural curses that spring to life, and certainly no need for a whip - although the hat might come in handy. It's not even as lucrative as *Time Team* would have you believe. They seem to unearth an interesting piece of pottery, skeleton or full-blown settlement in every episode. It takes a passionate person to drag out their metal detector and spend hours and hours trawling through muddy fields in the pouring rain just to find a few bottle caps, tent pegs, an old Coca-Cola can and, if they're lucky, a Victorian penny, hidden beneath the sludge.

A PASSION FOR THE PAST

And while they might not be professionals, detectorists know their stuff. As Andy says, "You can learn a lot from the amateurs, we're the most passionate, the plebs". It's not just a case of buying fancy equipment and taking a stroll along the beach, many detectorists spend their lives immersed in books, researching history and desperately seeking answers. Detecting isn't, or shouldn't be, just about striking gold and making a fortune. They are proud of their finds, they know exactly what they are - if it's a Roman coin from the 2nd century, an English Civil War lead musket ball, or the jackpot, a Medieval gold posy ring that many of us could mistake for a modern brass jump ring that's fallen off some farm equipment - and whether they have any monetary value or not (most coins don't, unless they are found as a hoard), they enjoy collecting their small fragments of the past. In *Detectorists*, Andy doesn't sell his finds, he doesn't agree

© Getty Images, Alamy

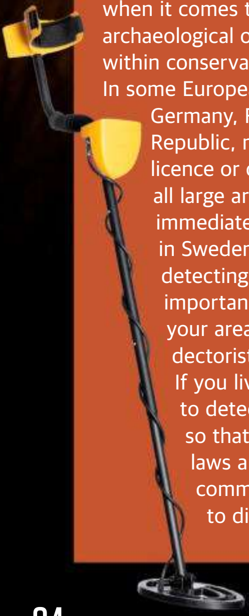
Roman coin found by detectorists in Gloucestershire, 2021

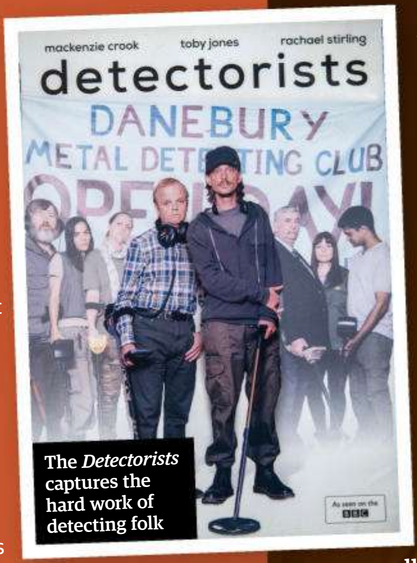
So you want to become a DETECTORIST?

You can't just buy a metal detector and start detecting yourself without doing plenty of prior research and knowing the do's and don'ts

Detectorists have strict legal responsibilities that include adhering to a code of conduct in order to aid conservation and abide by trespassing laws, as well as a duty to report their finds. However, countries have different laws and obligations. In England, Wales and Northern Ireland, you must obtain permission from the landowner before you can use a metal detector on any land, and this doesn't just apply to privately-owned land, it also includes anything council-owned or public. You aren't required to have any form of licence to search for archaeological objects, but if you discover anything that can be considered treasure, you must comply with the Treasure Act of 1996 and report your finds to your local coroner and the Portable Antiquities Scheme via your regional Finds Liason Officer. All non-treasure finds are reported voluntarily in England, Wales and Northern Ireland, but it is heavily encouraged and recommended that you do so. However, in Scotland and the Isle of Man, all archaeological objects must be reported to the relevant authorities, even if the artefact isn't considered to be treasure.

Most countries have some restrictions when it comes to metal detecting in search of archaeological objects, and most ban detecting within conservation and archaeological sites. In some European countries, such as Austria, Germany, France, Lithuania and Czech Republic, metal detecting requires a licence or official permission. In Denmark, all large artefacts and treasure finds are immediately property of the state, while in Sweden, Iceland and Cyprus, metal detecting is completely banned. It's important to make sure that you know your area's code of conduct for metal dectorists and the laws of your country. If you live in a country where it is legal to detect, it's helpful to join a local club so that you can keep on top of the laws and regulations, as well as have a community of knowledgeable people to discuss your findings with.





The *Detectorists* captures the hard work of detecting folk

> "Detecting isn't, or shouldn't be, just about striking gold"

with it. He's in it for the local history, not to make a quick buck off the back of a (significantly underfunded) museum. Studying for an archaeology degree, Andy wants to eventually "get to see the good stuff", or as Lance quips, to "swap his detector for a palette knife and spend his life scraping the dirt off the dirt".

HELP OR HINDRANCE?

Metal detecting often gets a bad reputation, as some people think of it as a get-rich-quick hobby - if you happen upon some major treasure, you could wind up selling your findings for millions! However, when they follow guidelines, adhere to rules and regulations and work in tandem with museums and archaeologists, detectorists can be a huge help in terms of mapping the landscape and even discovering major artefacts. In 2009, detectorist Terry Herbert struck gold in a field in Staffordshire, England. The largest hoard of its kind - almost 4,600 Anglo-Saxon gold and silver artefacts - it was acquired jointly by Birmingham Museum and Art Gallery and the Potteries Museum & Art Gallery for £3.285 million and was a unique find, as almost all the objects are military, even the jewellery, with the exception of three crosses, and many included depletion gilding. Between 2021 and 2022, detectorists in Anglesey, North Wales, discovered a large collection of Iron Age gold coins belonging to the Corieltauvi tribe, who occupied England's East Midlands before the Roman occupation. In 2023, Norwegian detectorist Erlend Bore discovered "the gold find of the century in Norway" when he unearthed nine gold medallions that featured mythical Norse horses, three gold rings and the pearls of a necklace dating back to the 6th century. And there have been many more discoveries made thanks to detectorists, including The Galloway Hoard (a large collection of Viking artefacts discovered in 2014 in the UK), The Hoxne Hoard (a large collection of Roman coins discovered in Suffolk, England in 1992), The Chew Valley Hoard (a collection of mid-11th century Norman coins discovered in Somerset, England in 2019) and a solid gold million-dollar chalice (discovered in 2008 off the coast of Florida in the wreckage of the 17th century Spanish galleon, the Santa Margarita). Not bad for a group of 'amateurs'.

A terrain technician in Germany inspects a find

Gold foils from the Staffordshire Hoard

WHAT IS TREASURE?

Treasure is many things to many people, but when it comes to the law, there are specifics to consider

In England, Wales and Northern Ireland, all finders of gold and silver objects, and groups of coins from the same find, over 300 years old, have a legal obligation to report such items under the Treasure Act 1996. There is then a list of criteria to take into account in order for something to be declared Treasure. In the UK, these can include the percentage of gold and silver in the object, the age of the item, the number of items found deposited together and, since 2023, even the location, rarity and connections to events or people. It is important that you contact your local museum as they can point you towards the relevant authorities and help you in deciding whether your find is Treasure or not. In England, Wales and Northern Ireland, potential Treasure needs to be reported to the district's coroner within 14 days. If something is found to be Treasure, it will be valued and museums will be given preference to acquire the items. The selling price is then usually shared 50/50 between the finder and the landowner. If an object is not deemed Treasure, it will be returned to the person who found it, with the landowner having 28 days to object. For more information, check out **www.finds.org.uk** or contact your local museum.

How to

DETECT RESPONSIBLY

Things to consider if you are keen to try your hand at digging for gold...

1. Check your local laws and make sure you know exactly what you can and can't do.
2. Always make sure you personally gain permission from the owner of the land you are detecting on.
3. Sign up to a local metal detectorist club and work with other hobbyists rather than in competition with them! Many clubs work in conjunction with museums and archaeologists.
4. Make a note of exactly where you are detecting on a map and record your findspots – this means the exact co-ordinates of where you discovered an object. This is useful information for local archaeologists.
5. If you discover anything that is of significant interest, try and leave it where it is and contact your local museum – once you remove the object from the ground and touch it, it will begin to deteriorate, so try and maintain its integrity for as long as possible so that conservationists can get to work. Archaeologists will also then be able to set up a proper dig site and see if there is anything else lurking underneath the soil.
6. If you are in the UK, report your finds to the Portable Antiquities Scheme via your local Finds Liaison Officer, even if it's not valuable. This helps experts to create a historical map of the landscape. If you are elsewhere in the world, notify your local museum or heritage organisation.
7. Take care of your finds. You have discovered a piece of history, even if it's not considered Treasure. Make sure you research the best conservation techniques and store them wisely, don't be tempted to try and clean them up using corrosive chemicals!

No Metal Detecting Allowed

Some countries have a complete ban on the use of metal detectors

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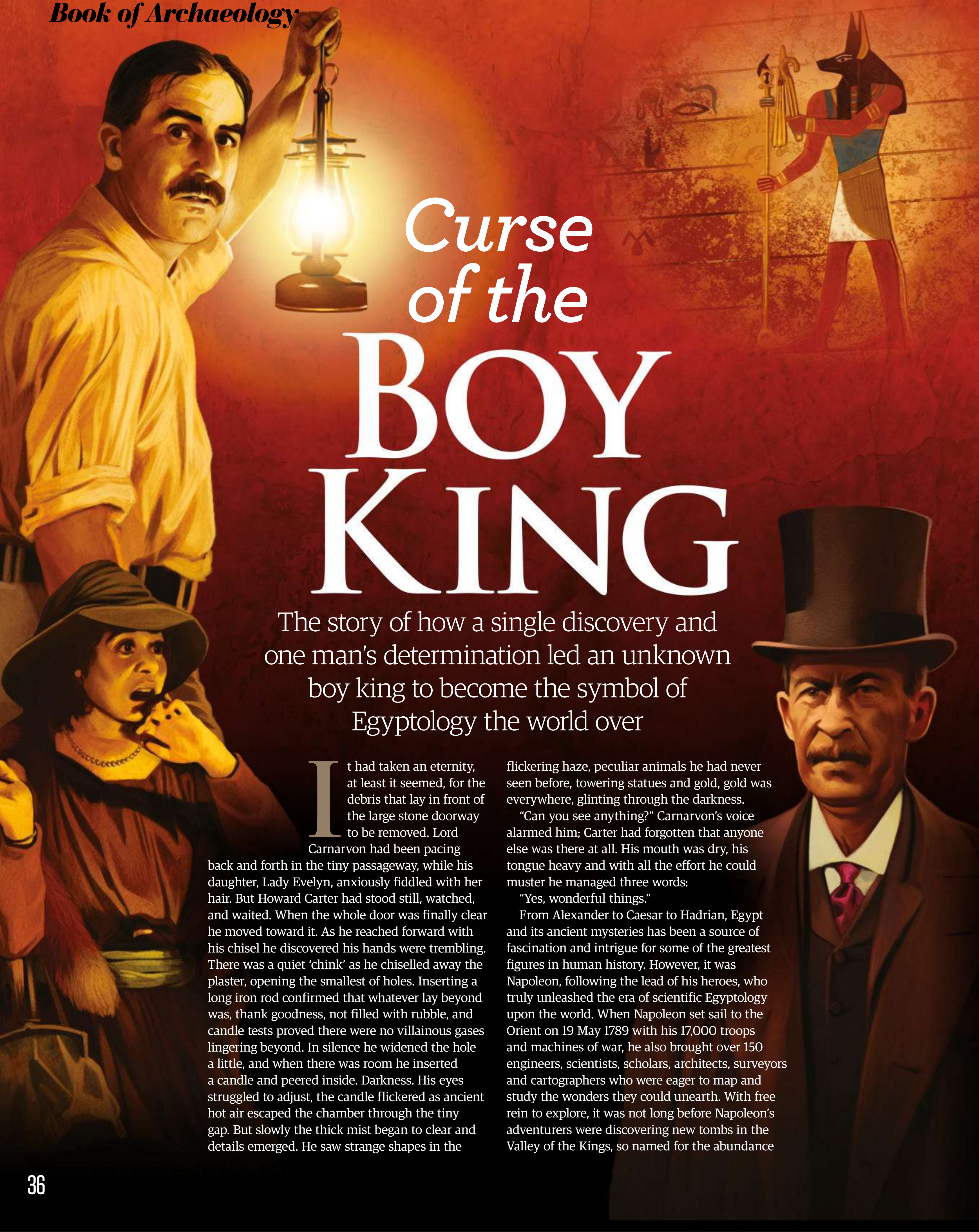


Curse of the BOY KING

The story of how a single discovery and one man's determination led an unknown boy king to become the symbol of Egyptology the world over

It had taken an eternity, at least it seemed, for the debris that lay in front of the large stone doorway to be removed. Lord Carnarvon had been pacing back and forth in the tiny passageway, while his daughter, Lady Evelyn, anxiously fiddled with her hair. But Howard Carter had stood still, watched, and waited. When the whole door was finally clear he moved toward it. As he reached forward with his chisel he discovered his hands were trembling. There was a quiet 'chink' as he chiselled away the plaster, opening the smallest of holes. Inserting a long iron rod confirmed that whatever lay beyond was, thank goodness, not filled with rubble, and candle tests proved there were no villainous gases lingering beyond. In silence he widened the hole a little, and when there was room he inserted a candle and peered inside. Darkness. His eyes struggled to adjust, the candle flickered as ancient hot air escaped the chamber through the tiny gap. But slowly the thick mist began to clear and details emerged. He saw strange shapes in the flickering haze, peculiar animals he had never seen before, towering statues and gold, gold was everywhere, glinting through the darkness.

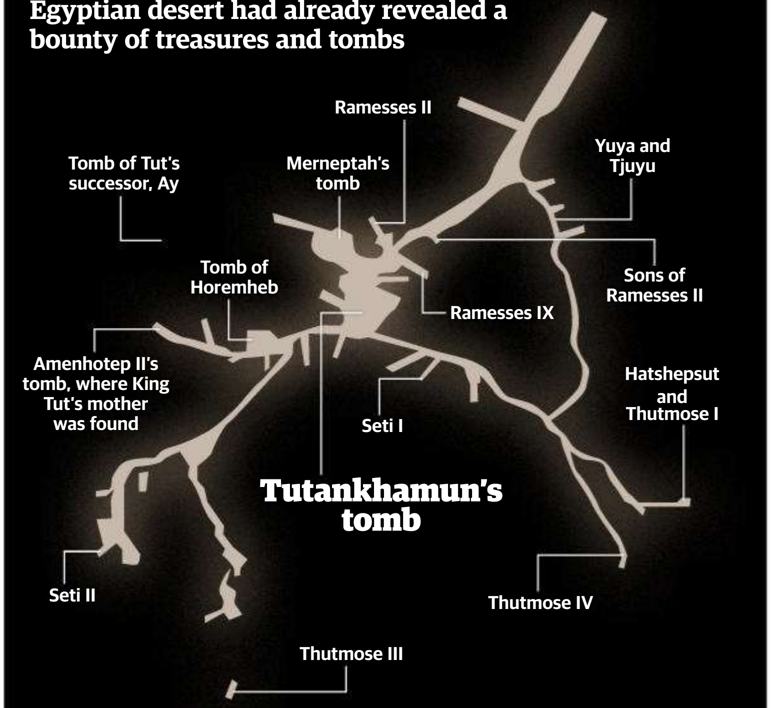
"Can you see anything?" Carnarvon's voice alarmed him; Carter had forgotten that anyone else was there at all. His mouth was dry, his tongue heavy and with all the effort he could muster he managed three words:

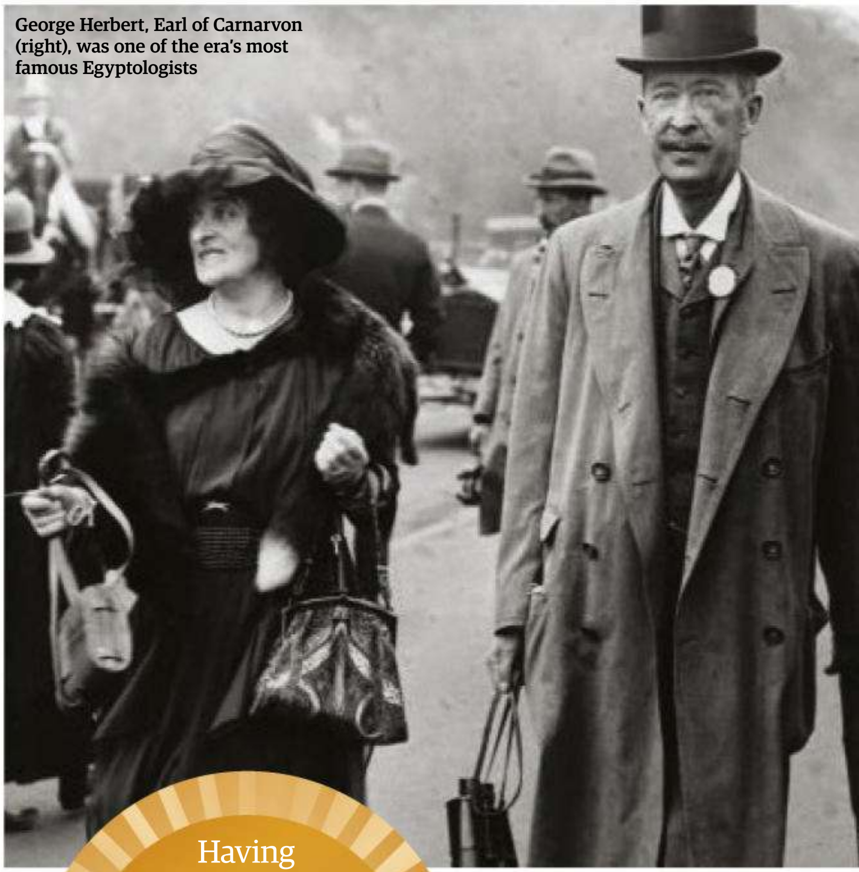
"Yes, wonderful things."

From Alexander to Caesar to Hadrian, Egypt and its ancient mysteries has been a source of fascination and intrigue for some of the greatest figures in human history. However, it was Napoleon, following the lead of his heroes, who truly unleashed the era of scientific Egyptology upon the world. When Napoleon set sail to the Orient on 19 May 1789 with his 17,000 troops and machines of war, he also brought over 150 engineers, scientists, scholars, architects, surveyors and cartographers who were eager to map and study the wonders they could unearth. With free rein to explore, it was not long before Napoleon's adventurers were discovering new tombs in the Valley of the Kings, so named for the abundance

VALLEY OF THE KINGS

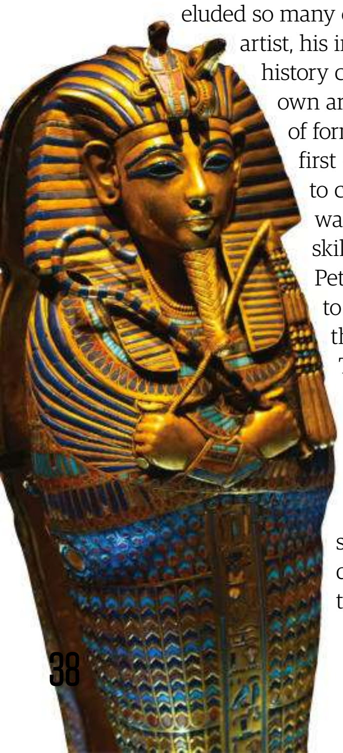
Before Tutankhamun's discovery, the Egyptian desert had already revealed a bounty of treasures and tombs




George Herbert, Earl of Carnarvon (right), was one of the era's most famous Egyptologists

of pharaohs who chose it as their final resting place. A thirst for the wonders of Ancient Egypt swept through Napoleon's army, and even the ambitious young general himself began to catch the fever. Over the next century, dozens of tombs, chambers and caches were unearthed by archaeologists and explorers from all over the world. But there was still one tomb that remained hidden: that of a little-known boy king who sat on the throne for less than ten years – Tutankhamun.

Howard Carter was not a likely candidate for the discovery of this vault of ancient treasure that had eluded so many others. The son of an artist, his introduction to Egyptian history came as a result of his own artistic abilities and lack of formal schooling. He was first employed, aged just 17, to copy scenes from tomb walls. He accompanied skilled excavator Flinders Petrie as the latter began to uncover clues about the mysterious Pharaoh Tutankhamun. The young Carter had no idea who this king was, but he felt the buzz surrounding him, and the rumour that somewhere in the vast desert of sand lay his tomb, untouched and bursting full of precious ancient treasures, alighted his boyish curiosity.



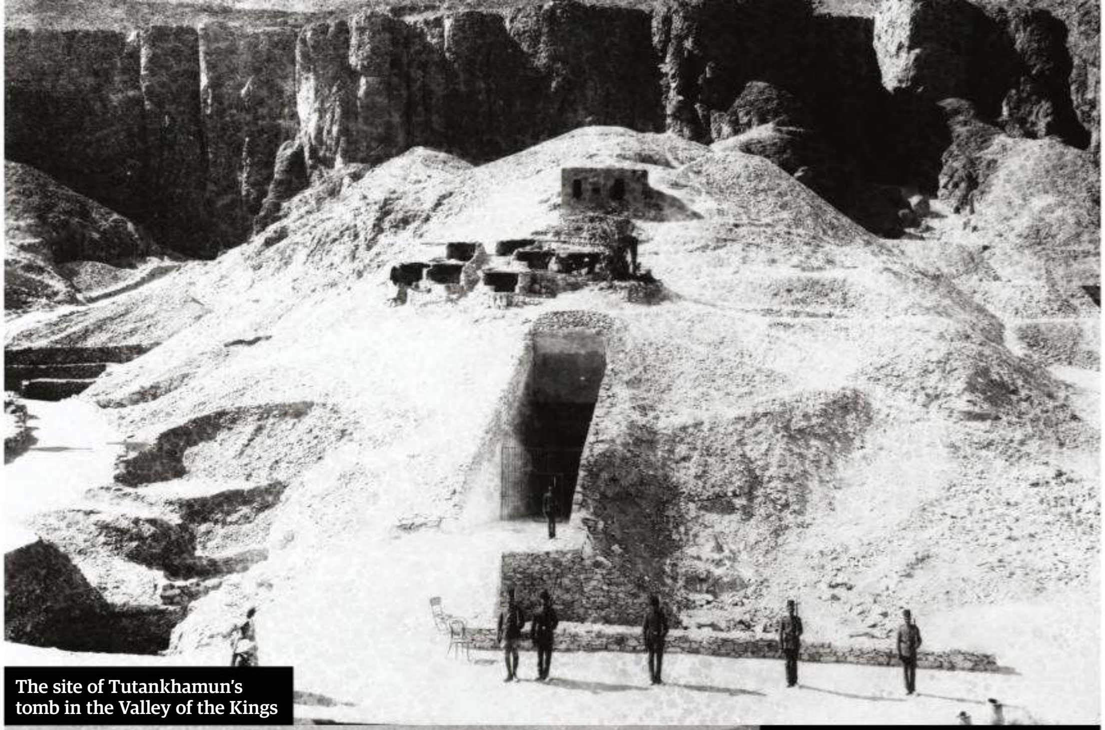
Although he quickly rose through the ranks, Carter's fiery and stubborn personality got the better of him when he refused to apologise after encouraging Egyptian guards to defend themselves against French tourists who had assaulted them. He left the Antiquities Service for good and became a free agent. Meanwhile, Theodore M Davis, a private sponsor of the Antiquities Service, and his team had made a curious discovery in the Valley of the Kings. What they had unearthed was a small site with a few artefacts bearing Tutankhamun's name. The discovery was decidedly underwhelming, but Davis was convinced he had finally discovered the plundered tomb of the king. In his publication, concerning the discovery he wrote, "I fear the Valley of the Kings is now exhausted."

Carter did not agree. Now unemployed and scraping a living by selling his paintings to wealthy visitors, he hardly had the funds required to pursue his suspicions that Davis' discovery was not the true tomb. But he was in luck. The lure of Egypt and its many secrets had drawn in the wealthy but frail George Herbert, Fifth Earl of Carnarvon. Both men were eager to make a spectacular discovery, and both men needed the other's skills and resources to do it. In 1909 they became a team, and when Davis gave up the concession to excavate in the Valley of the Kings in 1914, Carter and Carnarvon leapt at the chance. However, their peers viewed the pair as idealistic and naive, warning them that the only thing that would be discovered in their search would likely be the bottom of the Earl's wallet.

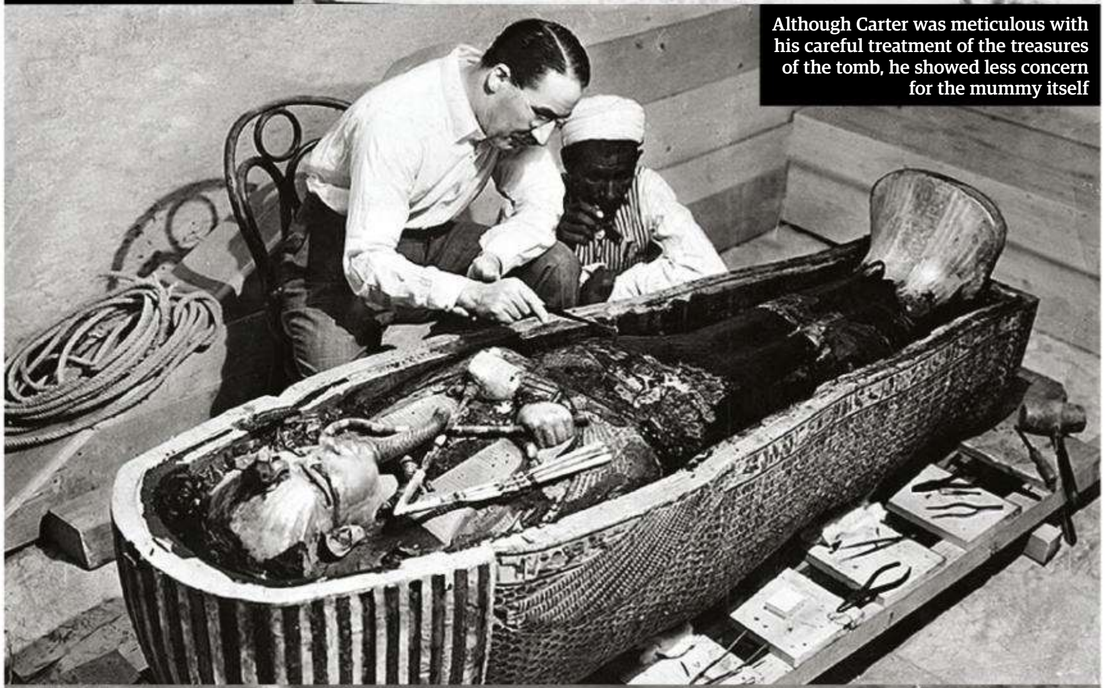
Having ascended to the throne at only 9 years of age, the mummy reveals that the boy king ruled for only ten years, dying at 19

Undeterred, Carter set about searching for the tomb he thoroughly believed existed. Initially interrupted by World War I, Carter was finally free to continue the excavations in 1917, working his way from the surface down to the bedrock of the valley floor. It was long, exhausting work, and it was estimated Carter's team moved 150,000 to 200,000 tons of rubble in the relentless Egyptian sun. But six seasons of digging later and they had still found nothing. Carnarvon was beginning to believe the critics were right. Although initially dazzled by the promises of Egypt and by Carter with his bounding enthusiasm, he had watched the money he had poured into the adventure trickle away with no reward, and he was growing increasingly impatient.

Carter managed to persuade his friend and Carnarvon granted him one final season. If he didn't find anything it would be the end of the money, and the end of the search for Tutankhamun's tomb. Extreme times called for extreme measures, and Carter focused his efforts



The site of Tutankhamun's tomb in the Valley of the Kings



Although Carter was meticulous with his careful treatment of the treasures of the tomb, he showed less concern for the mummy itself

DIGGING FOR A KING

Getting funding
Howard Carter convinces Lord Carnarvon to finance a search for the tomb. He begins digging in the Valley of the Kings, but by 1922 Carnarvon permits just one more season of funding.
1917-1922

A step in the right direction
While Howard Carter is temporarily away from the dig site, a step is found carved into the bedrock.
4 November 1922

A royal discovery
Carter discovers the sealed door of the tomb and sees a passage behind. He then sends a telegram to Carnarvon to alert him.
5 November 1922

Wonderful things
Through a tiny hole he glimpses what he describes as a "strange and wonderful medley of extraordinary and beautiful objects"
26 November 1922

Exploration
Carter, Carnarvon and Lady Evelyn notice a sealed doorway and secretly reopen an ancient robber's hole to crawl inside.
27 November 1922

The burial chamber
Carter opens the sealed doorway to the burial chamber and sarcophagus of the pharaoh. It is officially opened the next day.
16 February 1923

The curse begins
Lord Carnarvon dies after a mosquito bite becomes infected. Carter begins liaising with the authorities and press.
5 April 1923

At breaking point
After interference by the authorities, Carter locks the tomb and refuses to return the keys to the French director of Antiquities.
12 February 1924

The long-awaited return
Lady Carnarvon agrees to renounce her claims to the tomb and Carter returns to work. The tomb is opened officially.
25 January 1925

Mission complete
Conservation work on the tomb is finally completed and the treasures are sent to Cairo Museum.
1932

INSIDE THE TOMB

Step inside the various rooms and vaults that were found to be contained within the boy king's tomb

01 Staircase

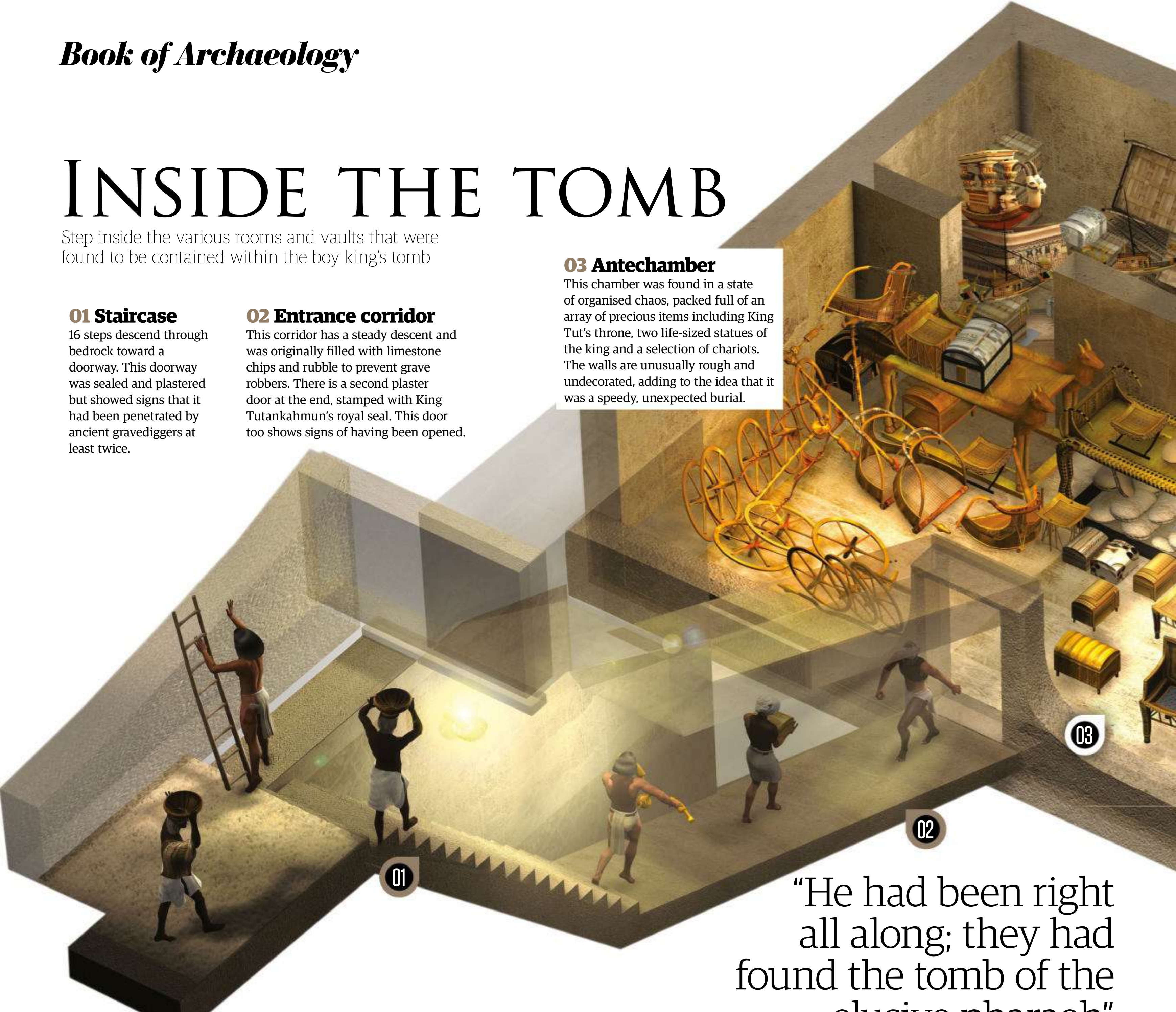
16 steps descend through bedrock toward a doorway. This doorway was sealed and plastered but showed signs that it had been penetrated by ancient gravediggers at least twice.

02 Entrance corridor

This corridor has a steady descent and was originally filled with limestone chips and rubble to prevent grave robbers. There is a second plaster door at the end, stamped with King Tutankahmun's royal seal. This door too shows signs of having been opened.

03 Antechamber

This chamber was found in a state of organised chaos, packed full of an array of precious items including King Tut's throne, two life-sized statues of the king and a selection of chariots. The walls are unusually rough and undecorated, adding to the idea that it was a speedy, unexpected burial.



> "He had been right all along; they had found the tomb of the elusive pharaoh"

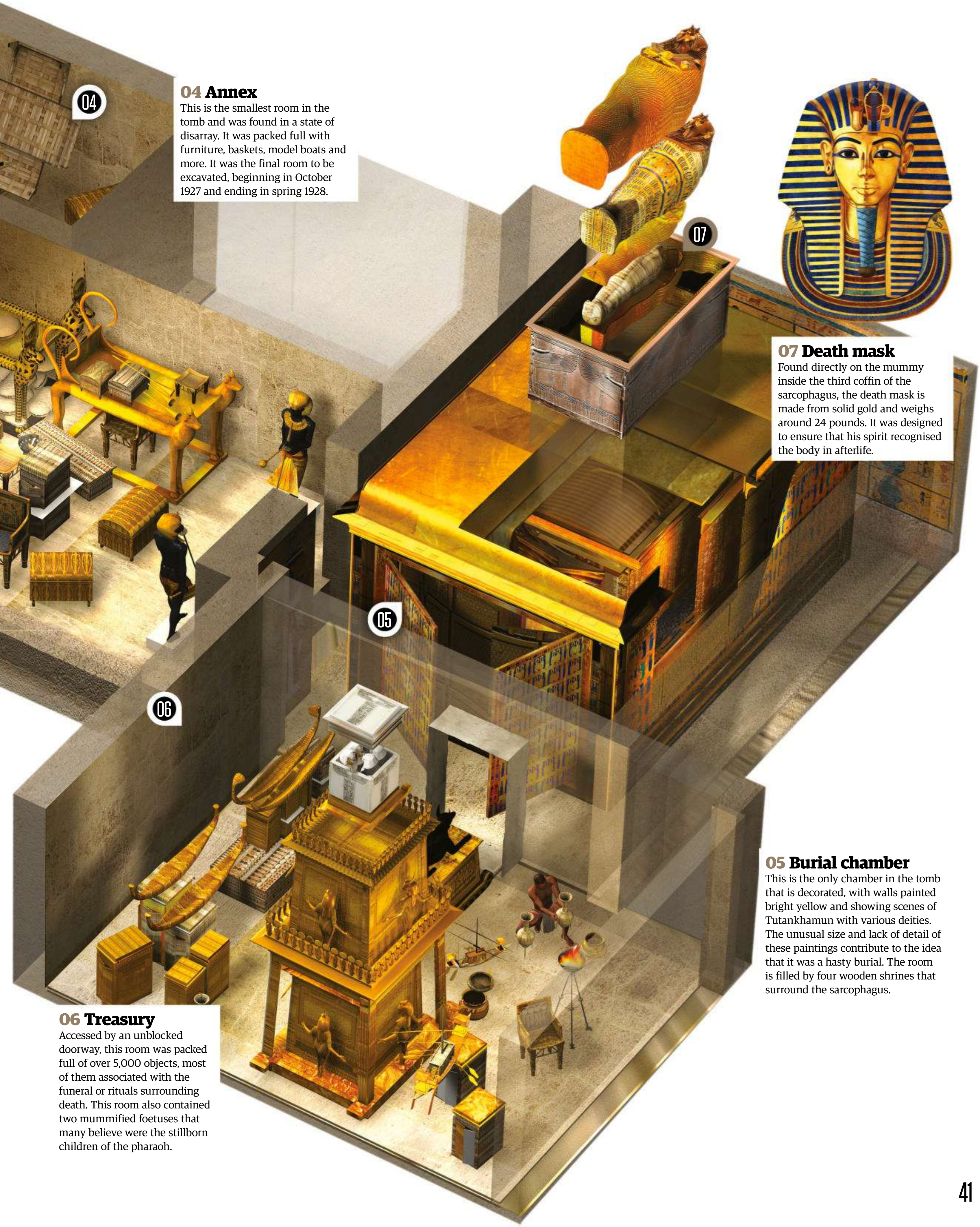
on the previously untouched area of ancient workman's huts beneath the entrance to the tomb of Ramesses VI. It had been left untouched because digging there would cause disturbance to the stream of tourists eager to visit the tomb. On 1 November 1922 they began to clear away the rubble and, just three days later, they found a step carved into the rock. Carter and his team followed the steps down and discovered a blocked and plastered doorway with a curious seal upon it. On 6 November Carter sent a telegram to his patron: "At last have made wonderful discovery in Valley a magnificent tomb with seals intact recovered same for your arrival congratulations."

Carter faced what was probably the longest wait of his life. As he awaited the arrival of Carnarvon he pondered what he could have possibly discovered. A man now bitterly accustomed to disappointment, he only allowed himself to conclude that perhaps he had found a dynasty cache. Even when the doorway was fully exposed and the name 'Tutankhamun' could be read, he reasoned that it was he or his officials who had sealed the chamber, and besides, he could see that the tomb had been tampered with by ancient robbers – it could well be empty. It was not until that fateful day, as he stood peering into the chamber by flickering candlelight that he fully understood the magnitude of his discovery – he had been right all along; it was the tomb of the elusive pharaoh.

When the doorway was finally opened it revealed exactly what Carter had described: wonderful things. The newly dubbed antechamber was packed full of an array of treasures, beautiful golden chests, grand chariots, beds carved in the shapes of animals and an abundance of other precious objects. However, Carter quickly noticed there was no coffin. But there were promising sealed doorways on the western and northern walls. For both Carter and Carnarvon the lure of the northern wall, guarded by two statues of the king himself, was too much to resist. Without alerting the Antiquities Service, the two men and Lady Evelyn embarked on a secret nighttime adventure into the burial chamber.

Although their curiosity had been sated, the raiders were keen to hide all evidence of their illegal exploration. They reblocked the hole they'd crawled through, and hid the modern plaster behind a basket lid. It was a terribly kept secret, and their nocturnal adventure was immediately obvious to all who inspected the tomb. Luckily, with everyone swept up in the excitement of the discovery, there were no enquiries about the strangely modern plasterwork on the ancient tomb.

On 29 November the press had gathered for the official opening of the tomb and locals had already



04 Annex

This is the smallest room in the tomb and was found in a state of disarray. It was packed full with furniture, baskets, model boats and more. It was the final room to be excavated, beginning in October 1927 and ending in spring 1928.

07 Death mask

Found directly on the mummy inside the third coffin of the sarcophagus, the death mask is made from solid gold and weighs around 24 pounds. It was designed to ensure that his spirit recognised the body in afterlife.

05 Burial chamber

This is the only chamber in the tomb that is decorated, with walls painted bright yellow and showing scenes of Tutankhamun with various deities. The unusual size and lack of detail of these paintings contribute to the idea that it was a hasty burial. The room is filled by four wooden shrines that surround the sarcophagus.

06 Treasury

Accessed by an unblocked doorway, this room was packed full of over 5,000 objects, most of them associated with the funeral or rituals surrounding death. This room also contained two mummified foetuses that many believe were the stillborn children of the pharaoh.

Lord Carnarvon and Howard Carter after the discovery of Tutankhamun's tomb

CT scans and X-rays have attempted to determine the cause of death

WHAT KILLED KING TUT?

He was murdered by his successor

The presence of a piece of bone in his skull cavity led experts to believe that Tutankhamun died from a brain haemorrhage caused by a blow to the head. Recent examination has discredited this theory.

Malaria

A DNA analysis showed malaria to be present in Tutankhamun's system, leading some to believe his weakened body was unable to fight it off. Although this can be a deadly disease, adults often develop immunity to it, so this theory is in some doubt.

A chariot crash

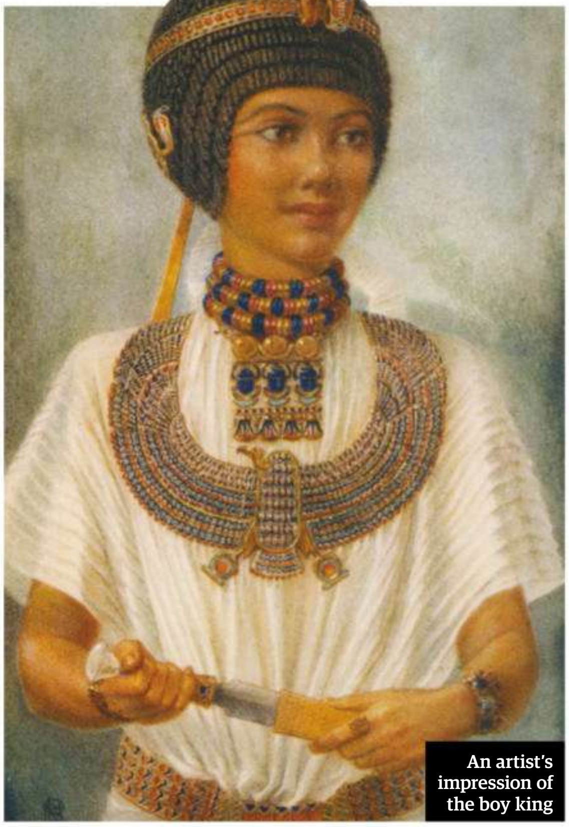
Tutankhamun's body had several injuries down one side. Car-crash experts concluded that the injuries would correspond to death by a chariot crash, which shattered his ribs and pelvis. However, it was later concluded that these injuries occurred after death.

Genetic diseases

A host of genetic diseases are attributed to Tutankhamun's death, including temporal lobe epilepsy. Experts hypothesised that this epilepsy caused a fatal fall that broke his leg, which then became infected.

Killed by a hippo

The fact that Tutankhamun had several broken ribs and that his heart was not embalmed made a case for a injury to the chest as the cause of death. As hunting hippos was a pastime of Egyptian pharaohs, it gave birth to this seemingly outrageous theory.



An artist's impression of the boy king

started to sell Tutankhamun-themed Christmas cards from makeshift tables set up in the vast sandy expanse of the valley. Although eager to discover what lay within the burial chamber, Carter was dedicated to meticulously clearing and documenting every single item discovered in the antechamber and annex, and of course, he was already very aware of what lay beyond the northern door, for he had already seen it. It took two and a half months to complete the mammoth task. It was a nerve-wracking experience for Carter and his team, as they risked the ancient – and very delicate – artefacts crumbling to dust at their touch. Every single chest they uncovered had to undergo a mini excavation of the seemingly random jumble of ancient items that had been hastily stuffed inside.

When it was finally time to officially open the burial chamber, Carnarvon gave a speech where he, as his brother described, was unusually nervous, "like a naughty schoolboy", quite obviously anxious that their nighttime raid may be discovered. Regardless, Carter breached the doorway and they were able to squeeze through three at a time. The sight that greeted them was astonishing – a great gilt shrine 2.7 metres (nine feet) high filled almost the entire chamber. It was completely overlaid with gold and undoubtedly housed the coffin of the king. Beyond what was now obviously the

The excavation of Tutankhamun's tomb was a massive undertaking

VICTIMS OF 'THE CURSE'

It wasn't just Carnarvon who supposedly succumbed to the pharaoh's curse…

Aubrey Herbert

Carnarvon's half-brother

Date of death: 26 September 1923

Cause: Blood poisoning

George Jay Gould I

Visitor to the tomb

Date of death: 16 May 1923

Cause: Fever

Sir Achibald Douglas-Reid

X-rayed Tutankhamun's mummy

Date of death: 15 January 1924

Cause: Unknown illness

Prince Ali Kamel Fahmy Bey

Prince of Egypt

Date of death: 10 July 1923

Cause: Shot by his wife

Arthur Cruttenden Mace

Part of excavation team

Date of death: 1928

Cause: Arsenic poisoning

Richard Bethell

Carter's secretary

Date of death: 15 November 1929

Cause: Smothered in bed

burial chamber, they uncovered yet another room packed with gleaming objects. The tomb seemed to hold treasure upon treasure upon treasure. It was a discovery of the sort that had never been seen before and was unlikely to happen again.

It did not take long for the British press to become consumed by this colossal discovery. News of the ancient treasures spread like wildfire and soon dignitaries and royalty from all over the world descended on the tomb, each one hoping for a private viewing. Anyone with even the slightest connection to any member of the team attempted to exploit it, but the general public and journalists had to make do with watching from beyond the tomb's perimeter wall. However, this position in itself provided a kind of spectacle, as the crowds watched eagerly as an array of mysterious items were removed from the tomb. Every day more and more tourists poured into Luxor, and hotels even set up tents in their gardens to accommodate the unprecedented demand.

On 5 April 1923 disaster struck – Carnarvon was dead. The source of his passing was an infected mosquito bite he had nicked with his razor, but to the public and press who had become so enthralled with the dark mysteries of Ancient Egypt there was only one explanation – the tomb was cursed. An array of 'experts' came forward, claiming in the tabloids that the Earl's death was certainly linked to his penetration and plundering of the solemn resting place of an ancient and powerful king. Numerous stories of dark and mysterious events added fuel to the gossip fire – such as Carter's yellow canary being killed by a cobra after the discovery of the tomb, and all the lights in Cairo going out the moment Carnarvon shuffled off his mortal coil. There were tales of an ancient script written above the entrance of the tomb: "Death comes on swift wings to him that toucheth the tomb of the Pharaoh", and to a gripped public, this curse of the mummy was becoming a reality.

The true – and rather more mundane – facts of the situation were, of course, ignored. Carnarvon was already ill and frail and had reached the average life expectancy of 57 at the time of his death. Cairo's electricity supply was notoriously unreliable, and no such message of ancient horrors existed. But for the press who were struggling to keep the public entertained by the slow moving events of the tomb, the human tragedy was gold. A close eye was kept on anyone vaguely associated with the excavation, and the press quickly published details of their untimely and shocking deaths. For Carter enough was enough. Time and time again he denied the existence of the curse, and said instead that "there was probably no place in the world freer from risks than the Tomb." But the public were having none of it; as far as they were concerned, the curse was very much real.

Although the legend of a curse was obviously not the ideal result, Carter, with his bounding fascination for all things Egyptian, probably would have been delighted by the mania for Egypt that spread across the world after his discovery. Carter's treasures remained in the Cairo Museum until the Sixties when they travelled all around the world. In the most popular exhibition of the British Museum's entire history, over 1.6 million people queued for over eight hours to glimpse the ancient wonders of the boy king's tomb back in 1972. But most importantly, if it weren't for the determination and self-belief of one man, they may still lie buried today.

> It is estimated that around 3,500 items were discovered within the fabulous tomb of Tutankhamun

MACHU PICCHU

The city in the sky

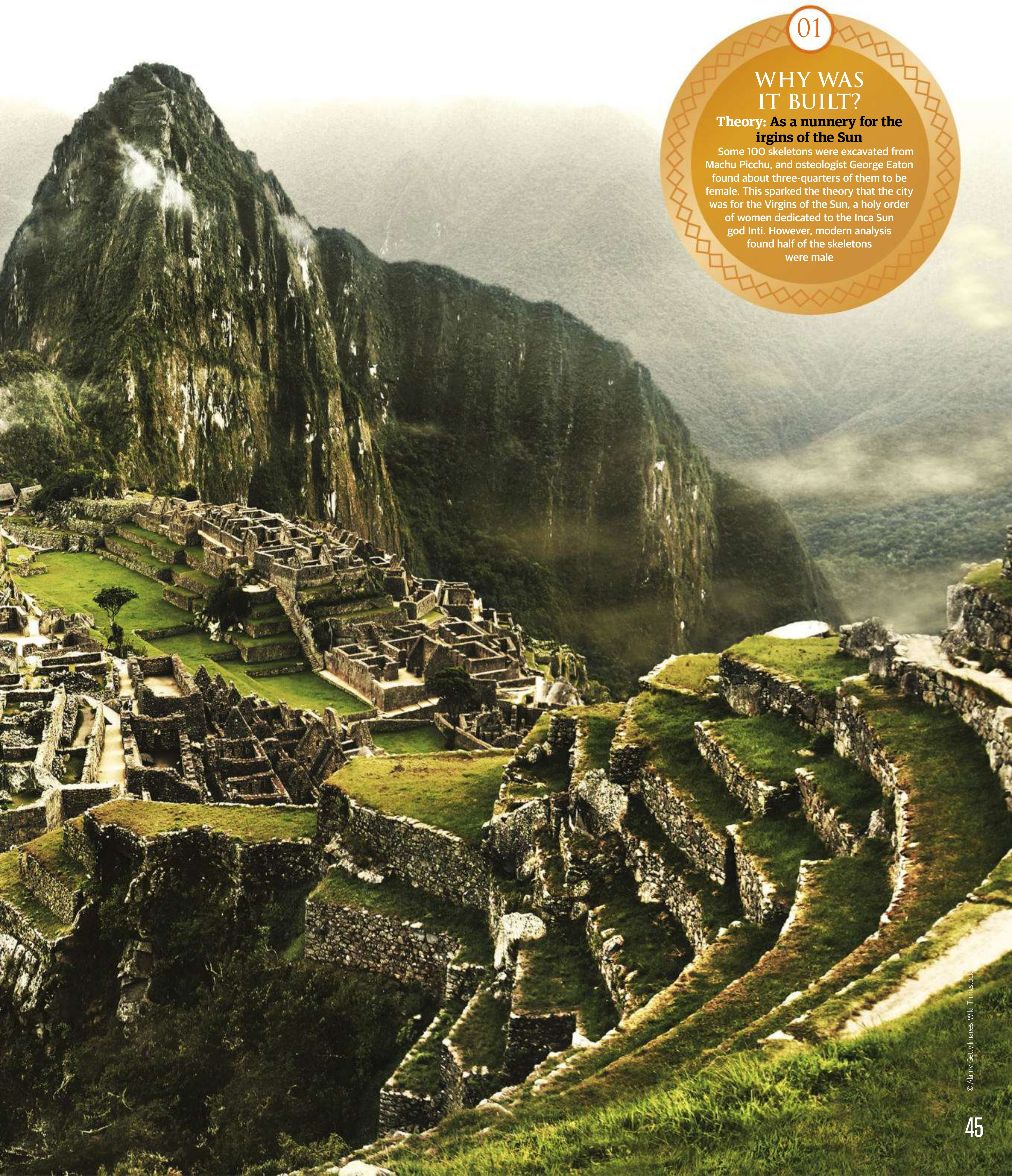
How one of the world's most mysterious historical sites came to be, and then fell to ruin

Written by Alex Hoskins

Hiram Bingham had exhausted the advice given to him about where to look for the lost city long ago. He had taken to being led up rocky tracks and through undergrowth and even to the edge of danger in search of Vilcabamba Viejo, but few of these journeys had given him any real hope of finding the notorious Peruvian lost city of the Inca. However, on 23 July 1911, a local farmer named Melchor Arteaga told Bingham, through his Quechua interpreter, that there were extensive ruins in the mountains, untouched by experts. Machu Picchu, meaning 'old peak', was the place, he said, as he pointed to the cloud-covered mountains looming behind Bingham.

The next morning, through a thick film of drizzle and further up into the thinning air, Arteaga led Bingham and his interpreter up the old mountain. The rest of the expedition crew, including Yale's best archaeologists, had declined to take yet another trip into the unknown for potentially little reward. After a gruelling hike up the treacherous pathways, they came to a hut used by local farmers. Arteaga spoke to a young boy, who then gestured to Bingham and the others to follow him. Just a few moments' walk from the hut, they trudged through rain-drenched foliage and saw it for the first time: the ruined city of Machu Picchu.

Straight in front of them, hundreds of feet long, they saw magnificent rows of stone houses, abandoned centuries ago and left to ruin but still undoubtedly a former scene of civilised life. Bingham knew it was Inca stonework, unmistakable even beneath the vines and trees that had begun to encase it since abandonment. This, surely, was the place they had come to find, and Vilcabamba Viejo was no longer lost. But it was not the place Bingham



01

WHY WAS IT BUILT?

Theory: As a nunnery for the irgins of the Sun

Some 100 skeletons were excavated from Machu Picchu, and osteologist George Eaton found about three-quarters of them to be female. This sparked the theory that the city was for the Virgins of the Sun, a holy order of women dedicated to the Inca Sun god Inti. However, modern analysis found half of the skeletons were male

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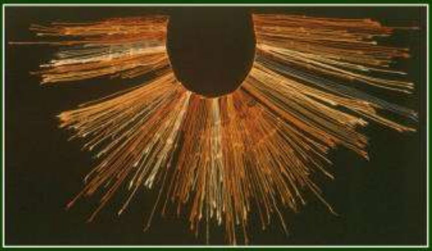
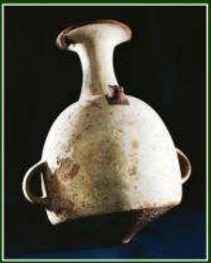
TREASURES OF MACHU PICCHU

The artefacts found are key to our fascination with the site and its people



Quipu
Without written language, the Inca created an ingenious system of administration for people and goods – the quipu, a system of knotted strings. The type of knot represented a number, and the distance between them multiples of ten, 100 or 1,000.



Aryballos
The aryballos was a large jug-style container most often used for carrying liquids and oils. With a conical base, it could be implanted in the ground for storage. These were often decorated with oxidised orange pigment and geometric patterns.

Bizmuth bronze ceremonial knives

Found by Hiram Bingham during excavations and unique to the site of Machu Picchu, this artefact is remarkable for its use of bismuth bronze and is one of the earliest examples of the copper alloy in use.

Ceremonial pot
Unearthed in 2012, it seems there is plenty still to be learned from Machu Picchu. This pot is a relic of Chimú culture, dating back 1,000 years. It is thought to be an offering made to Machu Picchu itself.

Mummies
Found near Machu Picchu, in Túpac Amaru, these mummified remains indicate that the preservation of dead bodies was part of Inca culture. Some bundles even contained more than one skeleton.

thought it was. This was arguably something much more important. The city he was searching for, Vilcabamba Viejo, was one he had actually already found and dismissed, thinking it was not grand enough, at Espiritu Pampa. Bingham may have died believing that the site he found at Machu Picchu was Vilcabamba Viejo, but the ruins and artefacts he found there have arguably given more in terms of understanding Inca society than any other, and it remains a very popular site in its own right, as people are drawn to the myriad unexplained aspects of its history.

Located 80 kilometres northwest of Cusco, high in the Andes Mountains, the site of Machu Picchu looks down on the Urubamba River. It nestles 2,350 metres high, between two higher peaks, Machu Picchu, from which it takes its name, and Huayna Picchu ('old' and 'new' peak respectively). It was at this precise spot that our most valuable insight into Inca civilisation was found, but how had this extensive and clearly archaeologically important site gone untouched by explorers, historians and even the ransacking of Spanish conquistadors until now? Bingham had hit the jackpot, but the fascinating treasure trove of Inca history brought with it just as many questions as it gave insights into the ancient civilisation – the biggest and most pressing of which was just who had built this incredible site and why?

02

WHY WAS IT BUILT?

Theory: As a fortress
The abundance of strong structures such as walls, towers and defences, including dry moats, led to the theory that Machu Picchu was built as a citadel. The need for a citadel may have been due to excessive droughts, turning water into a prized resource. This also allows for the abandonment of Machu Picchu, on the basis that water had become available elsewhere.

In the following years, and indeed decades, since the discovery, theories have abounded. The Inca did not develop a written form of communication and so left behind no codes that could be the key to our understanding. From assumptions of religious significance to pondering what sort of conflict might have called for a high-altitude fortress, any and every plausible theory was considered. As modern science has allowed for far more accurate analysis of the remains that were found, including about 200 skeletons, some of these have been discredited, such as the site being a monastery for the Virgins of the Sun, and today it is most widely believed that the site was built on the orders of the emperor Pachacuti to serve as a secondary residence and governmental outpost.

Pachacuti was an expert builder of the empire and one who relished the idea of building a city that would consolidate his stronghold across Peru and to the edge of the Bolivian borders. Pachacuti is often compared to Philip II of Macedonia because of his appetite for Inca expansion, and throughout his rule between 1438 and 1471 he significantly expanded the Inca Empire. With the help of his son and successor, Túpac Inca Yupanqui, Inca society spread its powerful reach out into what is now modern-day southern Peru and upwards to Quito in Ecuador.

Their methods of conquest were not always violent or aggressive, instead using cunning and negotiation as a tool to add new communities to the Inca Empire rather than taking them by force (although this was an option that Pachacuti certainly wouldn't discount if a region was resistant to striking a deal – he was no soft touch).

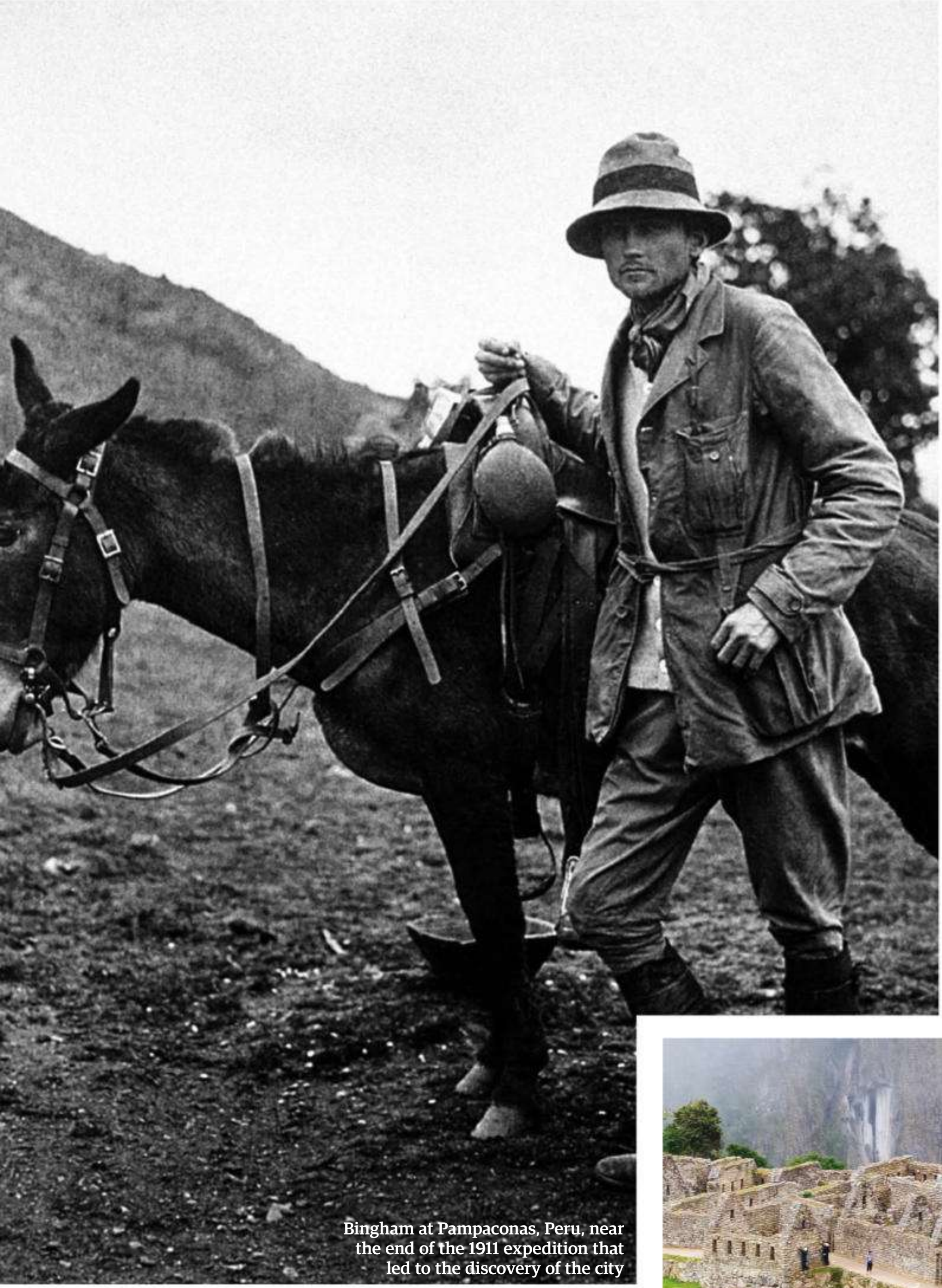
Joining the Inca 'confederation' could offer plenty of benefits for a community, such as access to luxury goods and trade, not to mention valuable passage along the remarkable Inca road system, spanning over 30,000 kilometres across South America. In return, Pachacuti's empire would benefit from the land, goods and services available in that region.

As soon as Hiram Bingham saw the buildings at Machu Picchu he knew them to be Inca structures. The engineering prowess of the Inca was so impressive and revolutionary that they have been called 'the Romans of the New World', and at Machu Picchu some of the most exceptional examples of their work still stand. The absence of mortar between stones and the uniform custom-cut bricks that form the buildings at Machu Picchu are typically Inca techniques. By not using mortar, the buildings were able to move slightly without crumbling, an ingenious defence against the frequent earthquakes that affect the region. To make up for the lack of mortar, the stones were cut so precisely as to fit together tightly like a jigsaw, and without modern machinery, this work was done by hand.

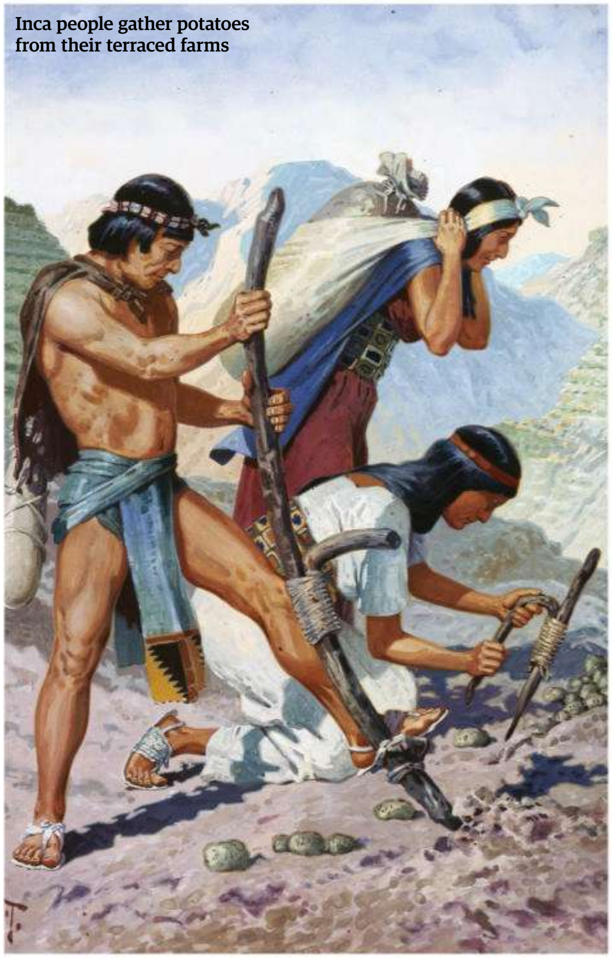
Huge numbers of uniform granite bricks were crafted, most likely by chipping away at slabs of stone with another rock. However, finding a rock tool strong enough wouldn't have been easy, as although granite fractures readily enough, it is a material far stronger than even concrete, and repeated striking of the rock would weaken most tools to breaking point.

The significant rainfall that Machu Picchu attracts also made the site more susceptible to mudslides, and the rock chippings that resulted from the crafting of the bricks were used to aid drainage, providing a resourceful and convenient solution to the regular wet weather. Machu Picchu's buildings continue to be examined by engineers today as they seek to improve the construction of buildings in earthquake-stricken areas across the globe. Where modern structures may crumble, Machu Picchu has stood strong for centuries.

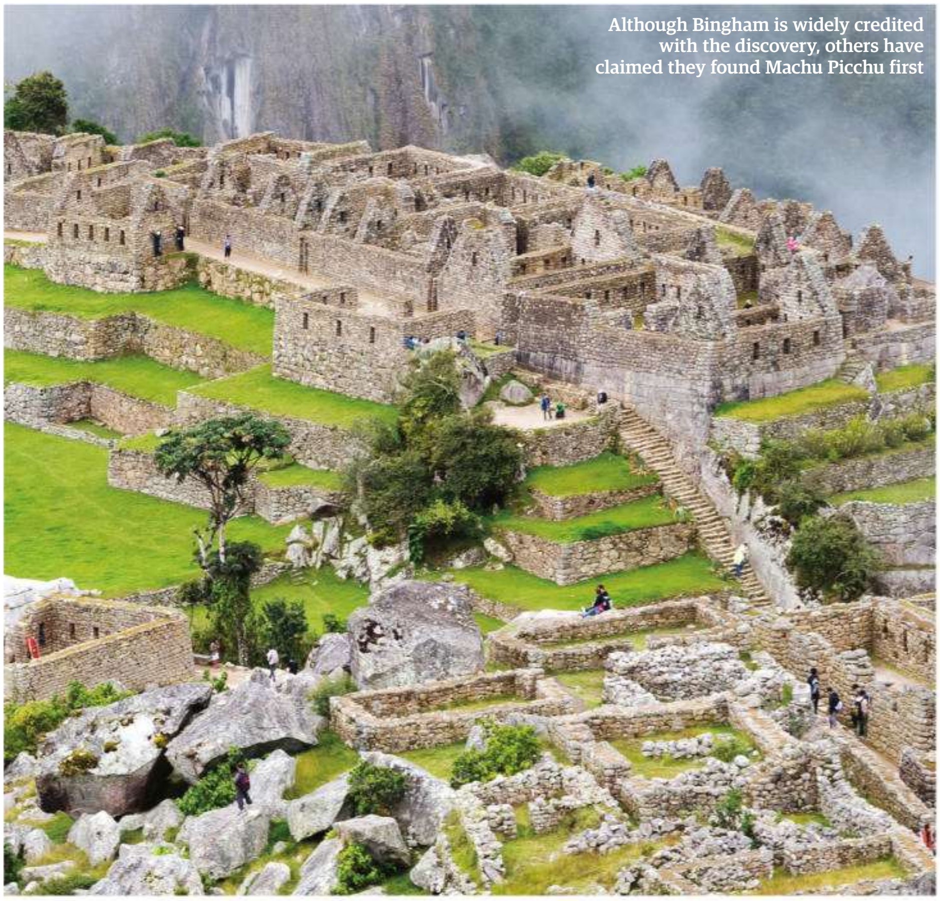
We may not know exactly who was tasked with the repetitive, laborious work of chipping away at granite blocks, but what is clear is that Pachacuti



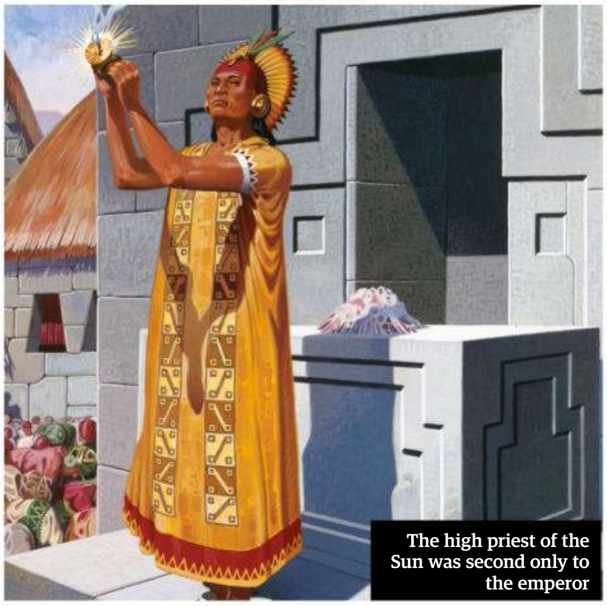
Bingham at Pampaconas, Peru, near the end of the 1911 expedition that led to the discovery of the city



Inca people gather potatoes from their terraced farms



Although Bingham is widely credited with the discovery, others have claimed they found Machu Picchu first



The high priest of the Sun was second only to the emperor

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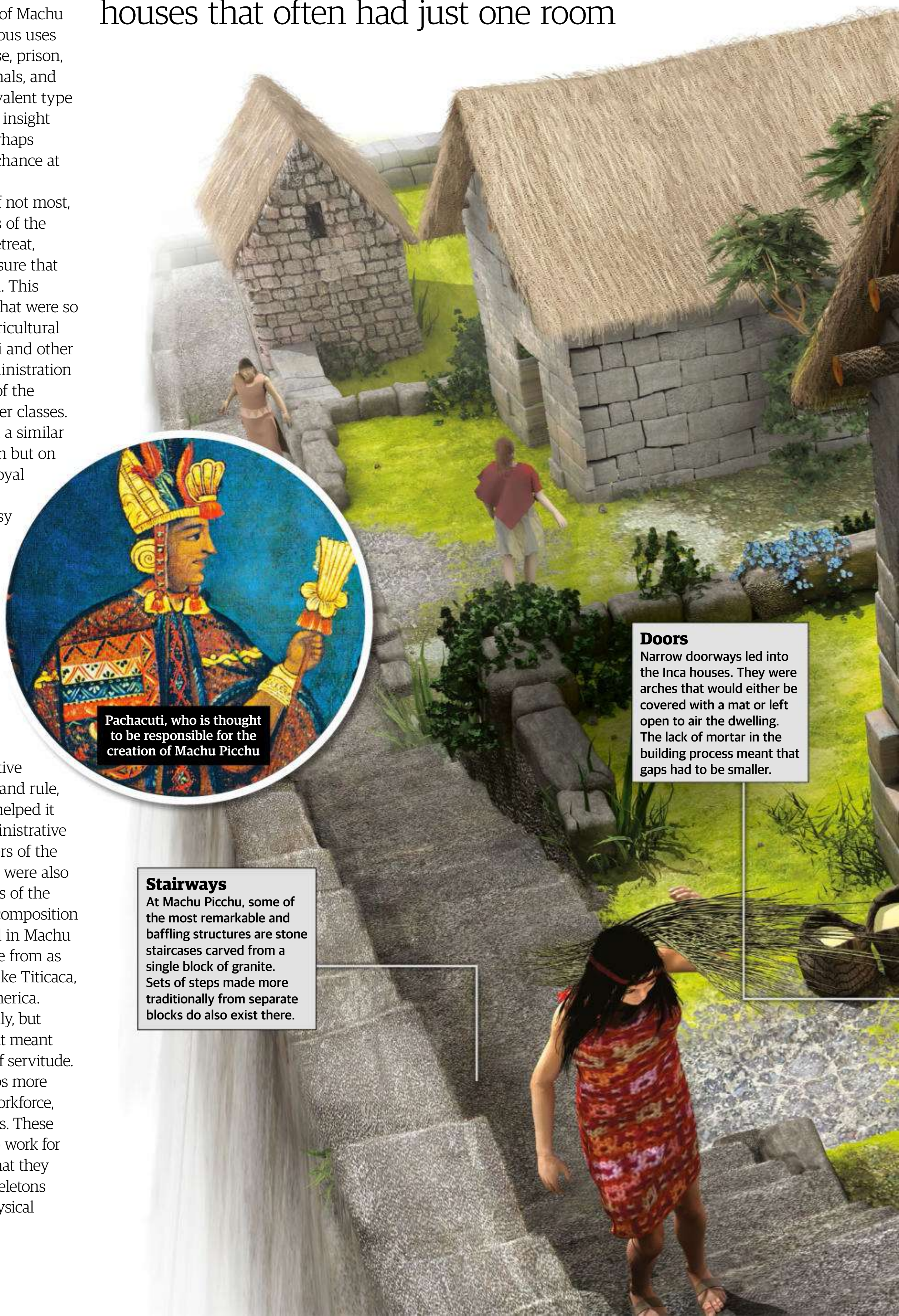
must have had plenty of workers at his disposal. Estimates put the figure of labourers working on the construction of the city at about 5,000 people, remarkable considering that it would go on to accommodate just 1,000 residents when built. What happened to the rest of the workers when the city was ready is, like much of the story of Machu Picchu, still a mystery. Buildings for various uses make up the site, including a guard house, prison, temples for worship of the Sun and animals, and water fountains, but by far the most prevalent type of building on the site is housing. For an insight into who exactly built the structures, perhaps those who inhabited them are our best chance at discovering the truth.

Many of the city's 1,000 inhabitants, if not most, would have been yanacona, the servants of the Inca upper classes. As this was a royal retreat, the yanacona were tasked with making sure that everything was just as Pachacuti desired. This would have included tending the crops that were so neatly laid out across Machu Picchu's agricultural terraces, personally waiting on Pachacuti and other members of the Inca elite, handling administration of the city, taking charge of the upkeep of the buildings, and generally serving the upper classes. The city would likely have functioned in a similar way to a stately home in Victorian Britain but on a larger scale, or perhaps a present-day royal residence – in comparison, Buckingham Palace keeps almost 200 staff, so it is easy to imagine that in the far more royally focused society of the Inca, the emperor would have kept a staff of 1,000.

The term 'retreat', often used when describing Machu Picchu, is most likely a slightly misleading one, as it implies that the site was used purely for recreation. It is true that Pachacuti and the nobility wouldn't have been permanent residents but, far from being an Inca high-society holiday village, the site was a governmental and administrative hub. It was a focal point for Inca society and rule, and many of the yanacona would have helped it to function in this way by fulfilling administrative roles. The yanacona consisted of members of the lower classes, sometimes local, but there were also many that were imported from the edges of the Inca Empire. Research into the mineral composition of teeth in skeletons that were excavated in Machu Picchu showed that some yanacona were from as far away as the Bolivian borders, near Lake Titicaca, and the northern highlands of South America.

Some yanacona were posted temporarily, but for many it was a permanent position that meant leaving behind family in favour of a life of servitude. In order to secure this labour (and perhaps more importantly, the loyalty) of their live-in workforce, the Inca elite needed to offer certain perks. These included gifts such as textiles and land to work for themselves, and it is generally believed that they were treated with honour and respect. Skeletons from the site showed no signs of hard physical

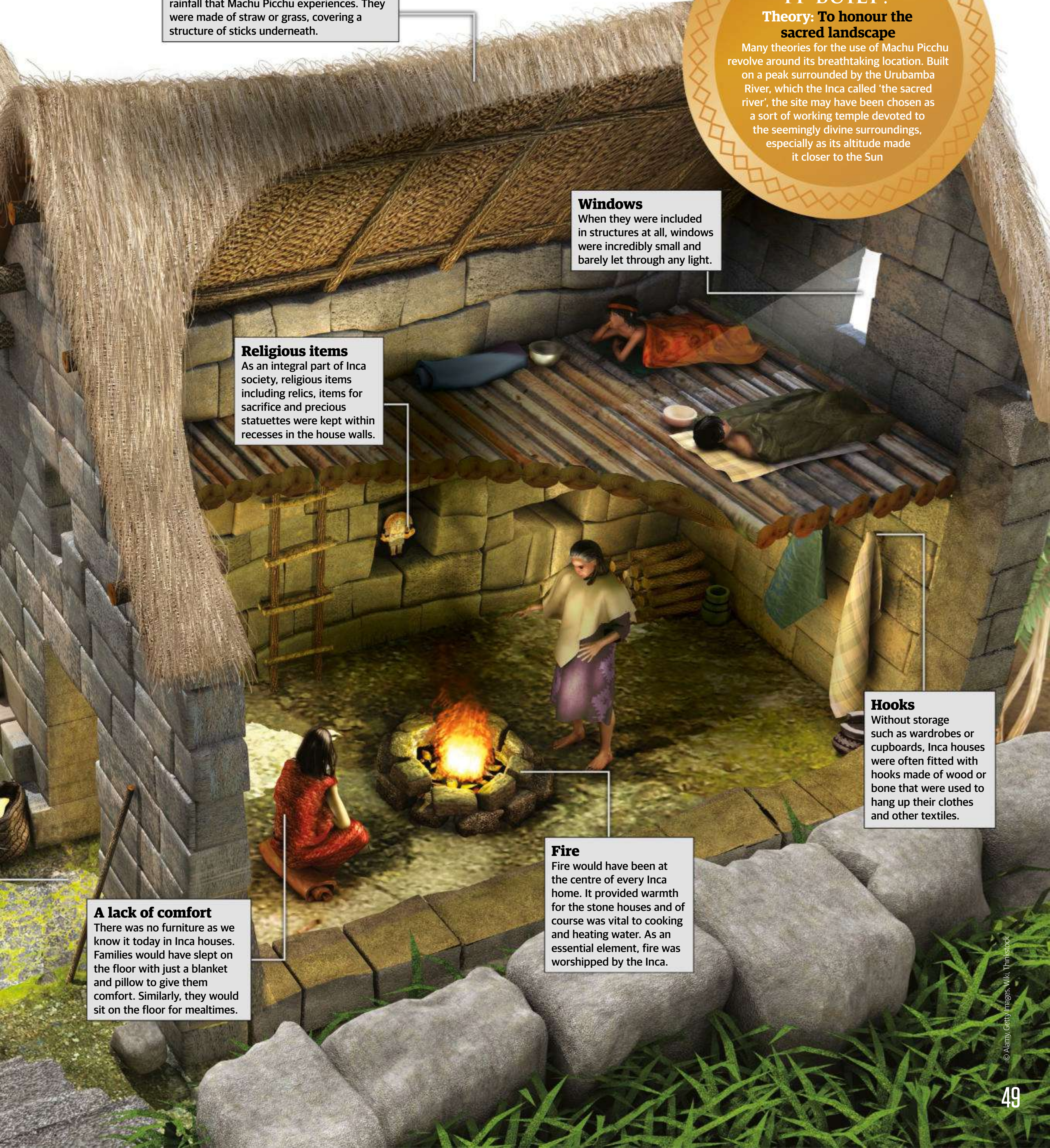

Pachacuti, who is thought to be responsible for the creation of Machu Picchu

An Inca home

The yanacona of Machu Picchu lived in simple houses that often had just one room

Doors
Narrow doorways led into the Inca houses. They were arches that would either be covered with a mat or left open to air the dwelling. The lack of mortar in the building process meant that gaps had to be smaller.

Stairways
At Machu Picchu, some of the most remarkable and baffling structures are stone staircases carved from a single block of granite. Sets of steps made more traditionally from separate blocks do also exist there.



Roof
Inca houses had roofs that were sloped much like our own today to allow for drainage, especially useful considering the heavy rainfall that Machu Picchu experiences. They were made of straw or grass, covering a structure of sticks underneath.

03

WHY WAS IT BUILT?

Theory: To honour the sacred landscape

Many theories for the use of Machu Picchu revolve around its breathtaking location. Built on a peak surrounded by the Urubamba River, which the Inca called 'the sacred river', the site may have been chosen as a sort of working temple devoted to the seemingly divine surroundings, especially as its altitude made it closer to the Sun

Windows
When they were included in structures at all, windows were incredibly small and barely let through any light.

Religious items
As an integral part of Inca society, religious items including relics, items for sacrifice and precious statuettes were kept within recesses in the house walls.

Hooks
Without storage such as wardrobes or cupboards, Inca houses were often fitted with hooks made of wood or bone that were used to hang up their clothes and other textiles.

Fire
Fire would have been at the centre of every Inca home. It provided warmth for the stone houses and of course was vital to cooking and heating water. As an essential element, fire was worshipped by the Inca.

A lack of comfort
There was no furniture as we know it today in Inca houses. Families would have slept on the floor with just a blanket and pillow to give them comfort. Similarly, they would sit on the floor for mealtimes.

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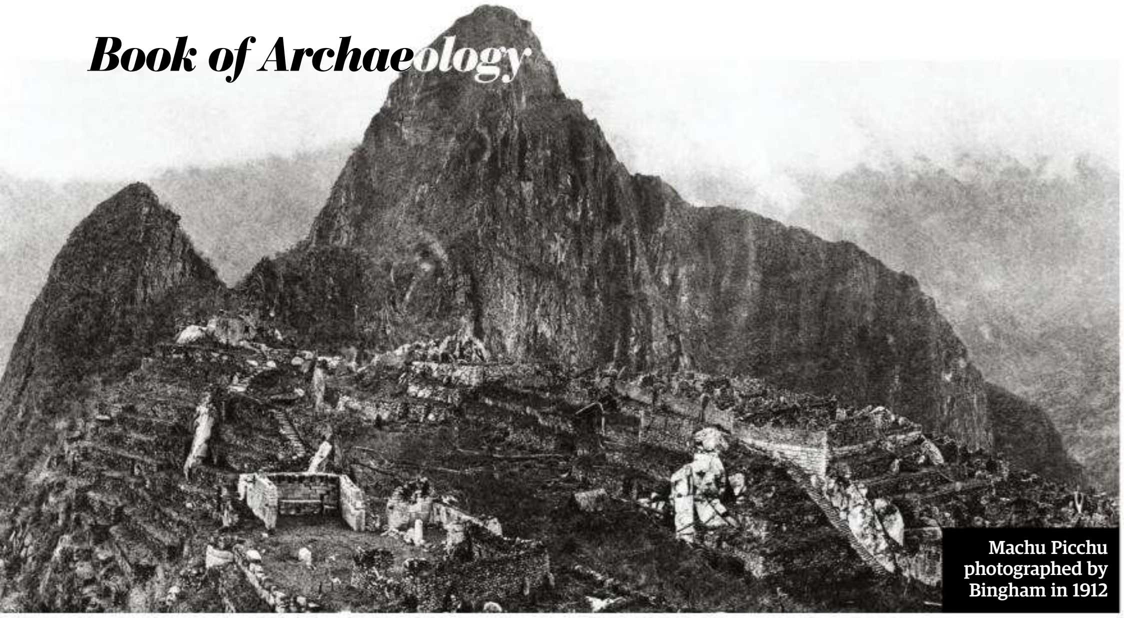
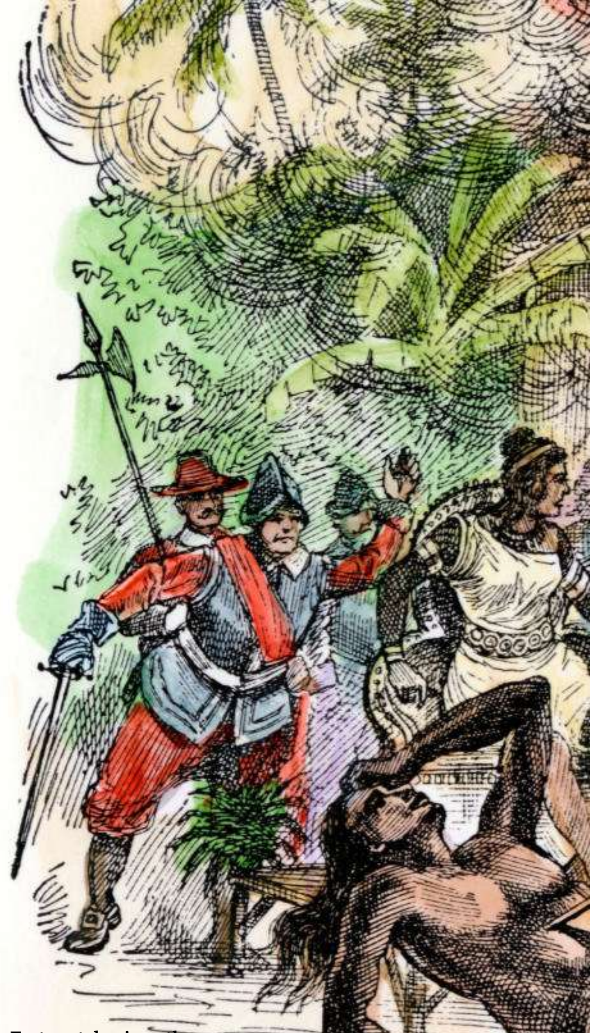


Machu Picchu photographed by Bingham in 1912



Fortunately given the destruction they wrought, the Spanish never found Machu Picchu

labour, and so it is entirely plausible that the sacrifice of leaving behind their family and home and to (in some cases) travel such great distances was made willingly for the promise of a comfortable and honourable life at the feet of the emperor.

Machu Picchu was built and flourished at an incredible rate during the time in which it was in use (about 100 years, a surprisingly brief period considering the intricate and time-consuming work it took to build the city). It was clearly built for longevity, on a site that was most likely spiritually significant – an abundance of Sun-worshipping temples combined with positioning that creates alignments at solstices state the case for Machu Picchu's spiritual credentials, even if that was not its primary purpose. There was no discernible reason for its abandonment, and yet today it stands just as it did when its people fled. So, just why did they abandon their spectacular citadel?

Of all of the theories that exist for why the Inca left Machu Picchu, the most prevalent is that by the time of the rule of Pachacuti's son, Túpac Inca, and grandson, Huayna Cápac, the Inca society had reached its peak and was beginning to decline. A civil war was raging as questions were raised over the succession, a struggle fought between two brothers, Huáscar and Atahualpa, sons of Huayna Cápac, over which of them should rule. Seizing this as an opportunity to build their own empire, the Spanish conquest of the 16th century was advancing across Inca society and colonising it for itself. Conquistadors such as Spanish governor Francisco Pizarro were poised to step into the opening that this in-fighting created, and they were largely successful in their endeavour.

It certainly seems that Machu Picchu was abandoned in an orderly fashion, perhaps even before the Spanish had arrived, as there are no signs of conflict on the impeccably preserved dwellings. Why the Spanish would not have destroyed more of the city if they did indeed find it, we will never know. However, there is no historical record of the Spanish happening upon Machu Picchu in their conquests, and in fact many historians believe that it was untouched by the Spanish, most likely by a stroke of luck.

Another theory that is plausible if somewhat difficult to explain is that the Inca at Machu Picchu fell foul of diseases such as smallpox, which was brought into their society by the European colonialists. With a community that had been built and bred from purely Southern American stock, their immune systems were entirely unequipped for the introduction of such vicious strains of disease. If this is what befell the population of Machu Picchu, the lack of bodies left behind is confusing, but it is possible that not all of the 1,000 inhabitants would have fallen ill, and many may have moved on as disease gripped the community. There is no doubt that European diseases were the end for the Inca people as a whole, but there is not enough evidence to prove whether it was this that led to the people of Machu Picchu abandoning the city.

Machu Picchu's mysteries are part of what makes it one of the most-visited and revered sites in the world. Today, it is recognised as a UNESCO World Heritage Site, and research continues into the skeletons, artefacts and ruins that Machu Picchu continues to offer up.

As we work to interpret the society, the lives of the people who lived there and the circumstances that led to its abandonment, we must also accept that there are plenty of questions raised by the site that will never be answered. This, surely, is the secret behind the world's fascination with Peru's city in the sky.

04

WHY WAS IT BUILT?

Theory: Aliens are responsible

As with many historical mysteries, some paranormal enthusiasts believe that it was built by visiting aliens. While this theory may have no traction with most informed parties, it is an intriguing one nonetheless. Supernaturalist Erich von Däniken theorised that aliens brought civilisation to primitive man long ago and that this may have included Machu Picchu's stonework

EXPERT OPINION

What insight into Inca life has the site of Machu Picchu been able to provide us with?

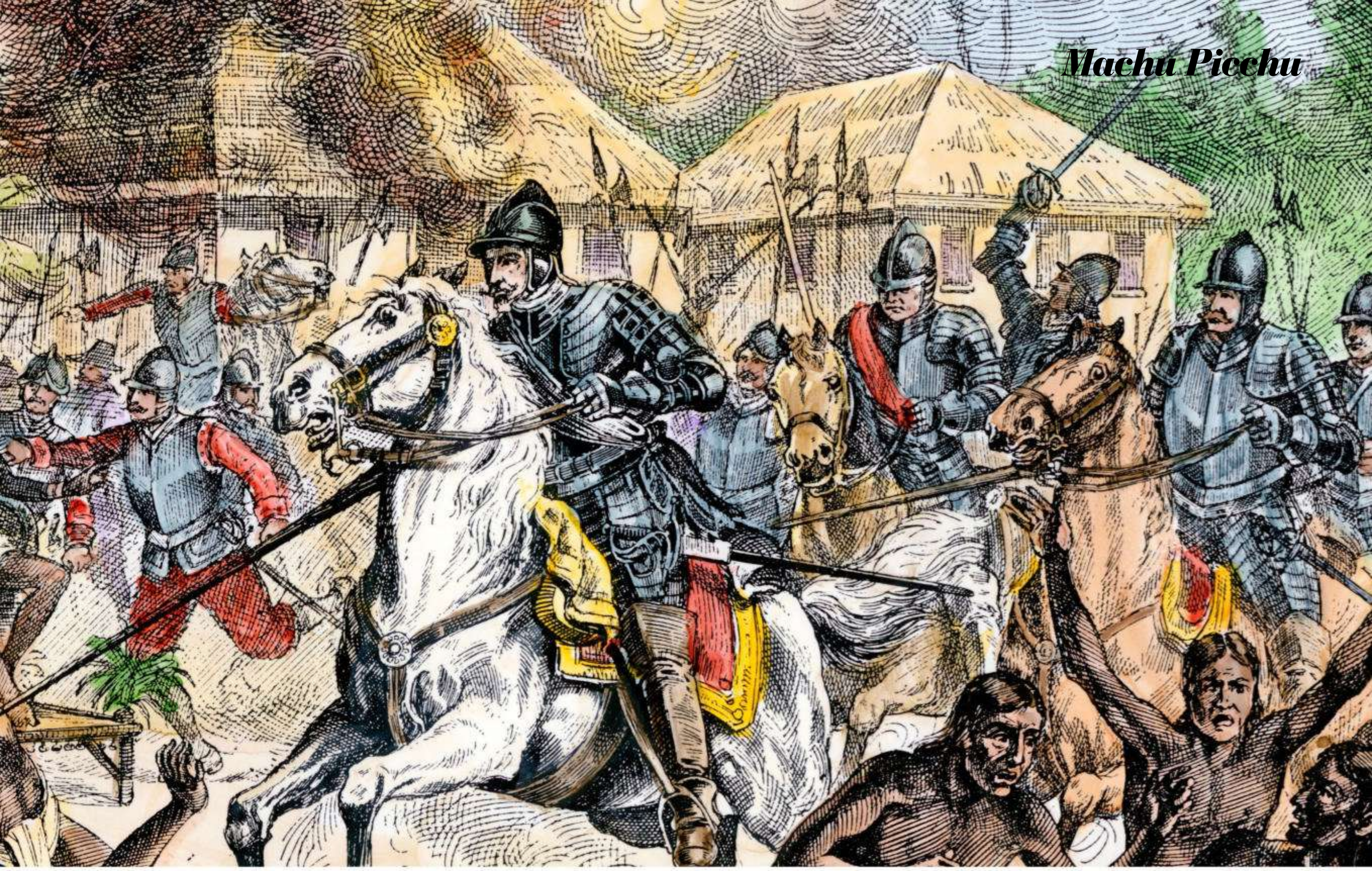
Brief bio

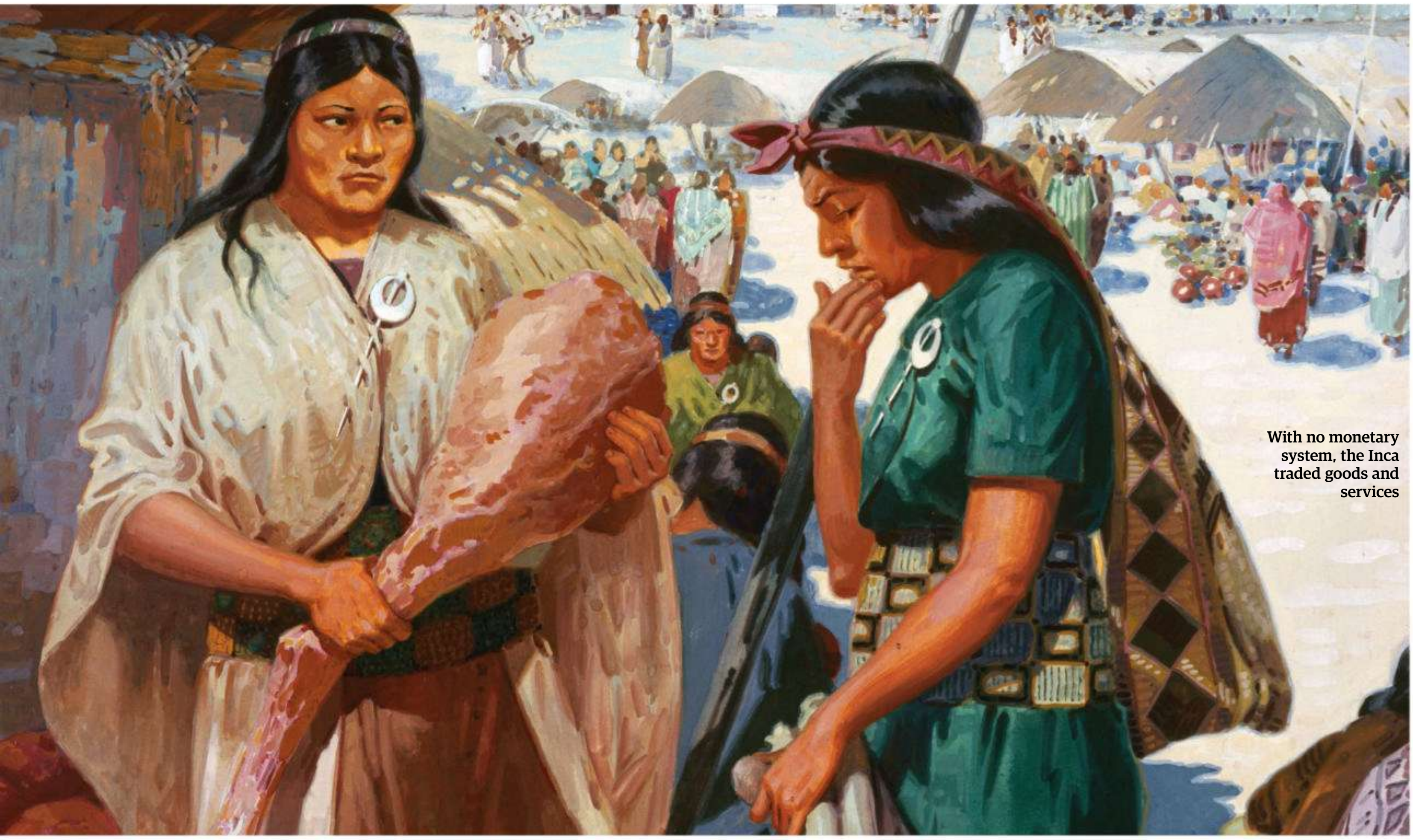
Dr John Hemming, CMG

With more than 50 years of hands-on research and exploration in South America, Dr John Hemming has written and published 11 books on South American and Inca history.

Apart from being one of the world's most beautiful and exciting ruins, Machu Picchu is hugely important in understanding Inca society. It was the creation of Pachacuti, a protean ruler who launched the Inca on a century of expansion and radically changed Inca religion, government, colonialism, architecture and planning. Machu Picchu was the first – and finest – royal estate built near to the Inca capital Cusco. However, as a royal estate, Machu Picchu was no more typical of everyday life for Inca people than, say, Balmoral is to ours today.

Built on a virgin site largely abandoned after Pachacuti's death, and never occupied by Spaniards, Machu Picchu provides archaeologists with the materials and artefacts of a complete royal settlement. Hiram Bingham removed these for study and they have just been returned to Peru a century later. They are of course of high quality although not of outstanding beauty, but they do show what the Inca elite used in their daily lives.





With no monetary system, the Inca traded goods and services

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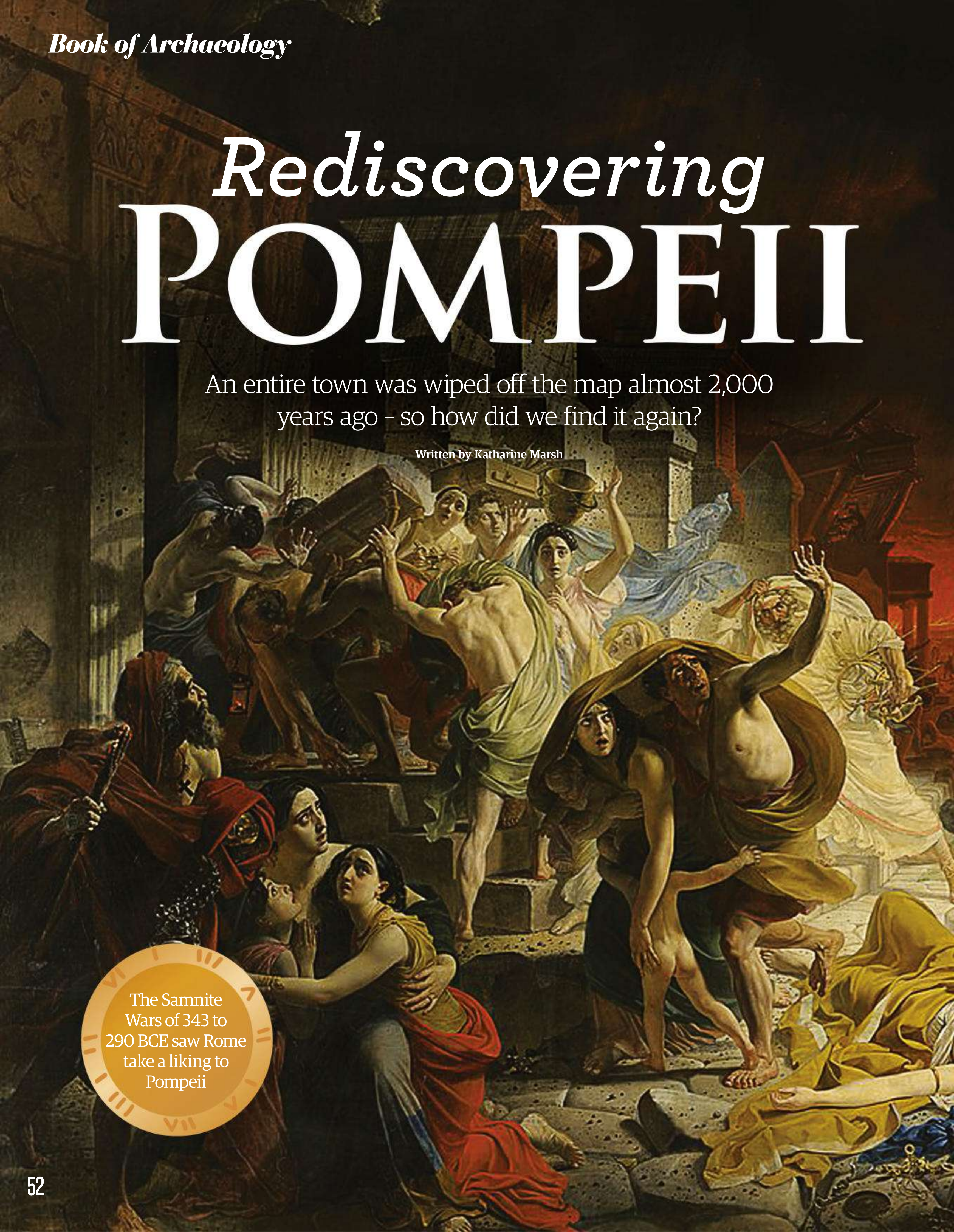
Rediscovering POMPEII

An entire town was wiped off the map almost 2,000 years ago – so how did we find it again?

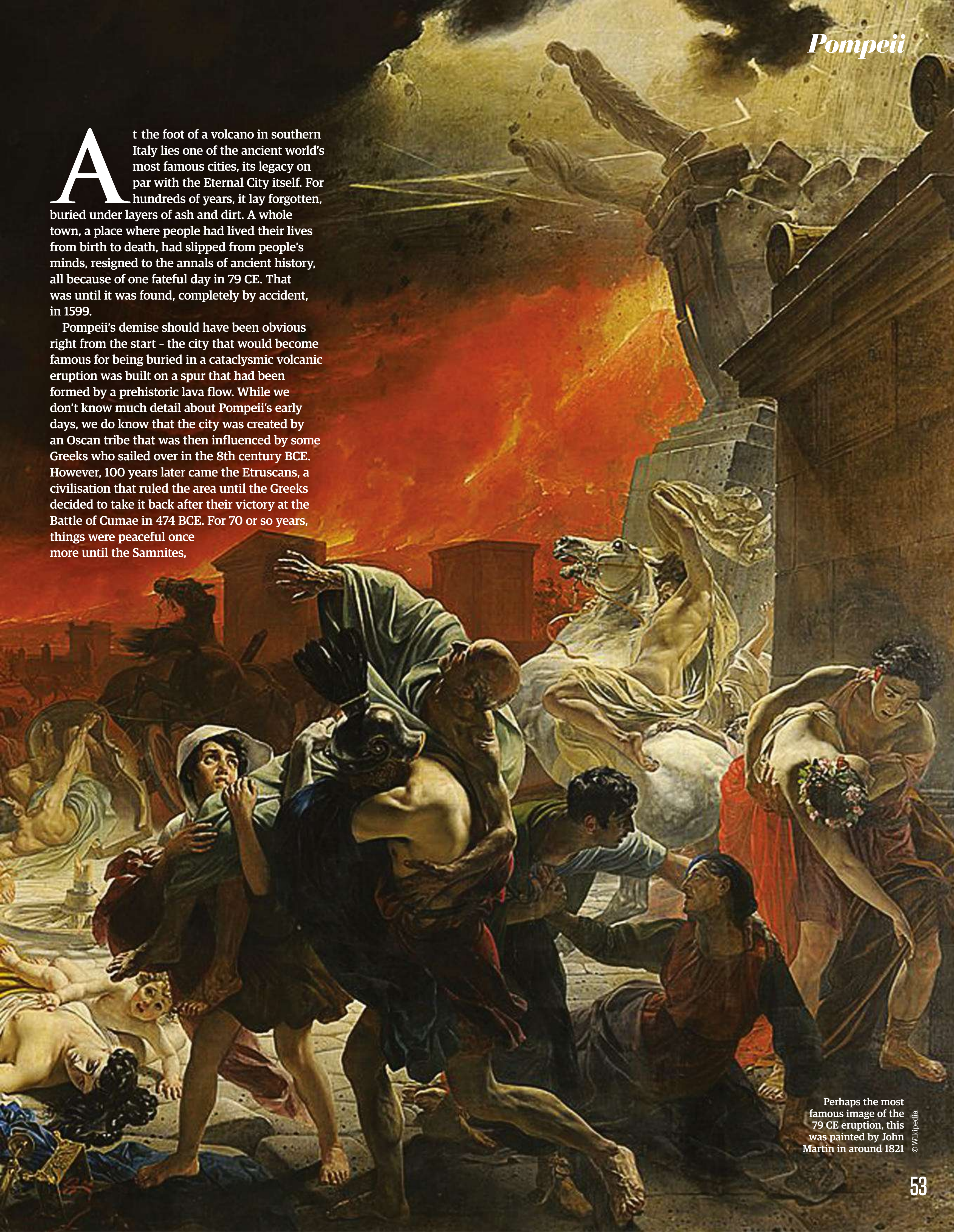
Written by Katharine Marsh



The Samnite Wars of 343 to 290 BCE saw Rome take a liking to Pompeii

At the foot of a volcano in southern Italy lies one of the ancient world's most famous cities, its legacy on par with the Eternal City itself. For hundreds of years, it lay forgotten, buried under layers of ash and dirt. A whole town, a place where people had lived their lives from birth to death, had slipped from people's minds, resigned to the annals of ancient history, all because of one fateful day in 79 CE. That was until it was found, completely by accident, in 1599.

Pompeii's demise should have been obvious right from the start - the city that would become famous for being buried in a cataclysmic volcanic eruption was built on a spur that had been formed by a prehistoric lava flow. While we don't know much detail about Pompeii's early days, we do know that the city was created by an Oscan tribe that was then influenced by some Greeks who sailed over in the 8th century BCE. However, 100 years later came the Etruscans, a civilisation that ruled the area until the Greeks decided to take it back after their victory at the Battle of Cumae in 474 BCE. For 70 or so years, things were peaceful once more until the Samnites,



Perhaps the most famous image of the 79 CE eruption, this was painted by John Martin in around 1821

© Wikipedia

More is being uncovered every day as excavations take place in Regio V

an Italic tribe, appeared towards the end of the 5th century.

It was thanks to the Samnites that the Romans first became interested in Campania, the area in which Pompeii and its neighbouring towns of Herculaneum and Stabiae were nestled. The Samnite Wars of 343 to 290 BCE saw Rome take a liking to Pompeii and it tried to exert its influence, but Pompeii wasn't having any of it.

Fiercely independent, Pompeii tried to rebel but the Roman consul Sulla came in and stopped it in 80 BCE, setting up his colony of Venus by resettling 4,000-5,000 soldiers in the city.

Pompeii was a prosperous town, densely populated with 10,000 to 12,000 people, one-third of whom were slaves, over an area of three square kilometres. Being so close to the fertile slopes of Mount Vesuvius was nothing less than a boon too, with hundreds of farms and villas just outside the town providing food and goods. The city also had the advantage of being almost right on the coast - the landscape of the Bay of Naples has since changed, making Pompeii seem further inland - but it was this that attracted the upper classes of Roman society. In a way, Pompeii was their seaside resort, with their villas providing grand views of the bay and the stunning scenery all around. The city even piqued the interest of Emperor Nero, remembered today for his tyranny, whose wife Poppaea Sabina was actually a native Pompeiian.

Home to a port, Pompeii saw some of the Roman Empire's most expensive goods pass through its streets. Silk, clams and wild animals all entered the Italian peninsula there, as well as exotic fruits from around the known world. Garum, a kind of fish sauce, was made locally, and olives were plentiful as they grew in groves on the slopes of the mountain.

> Parts of the thick city walls crashed to the ground and temples crumbled

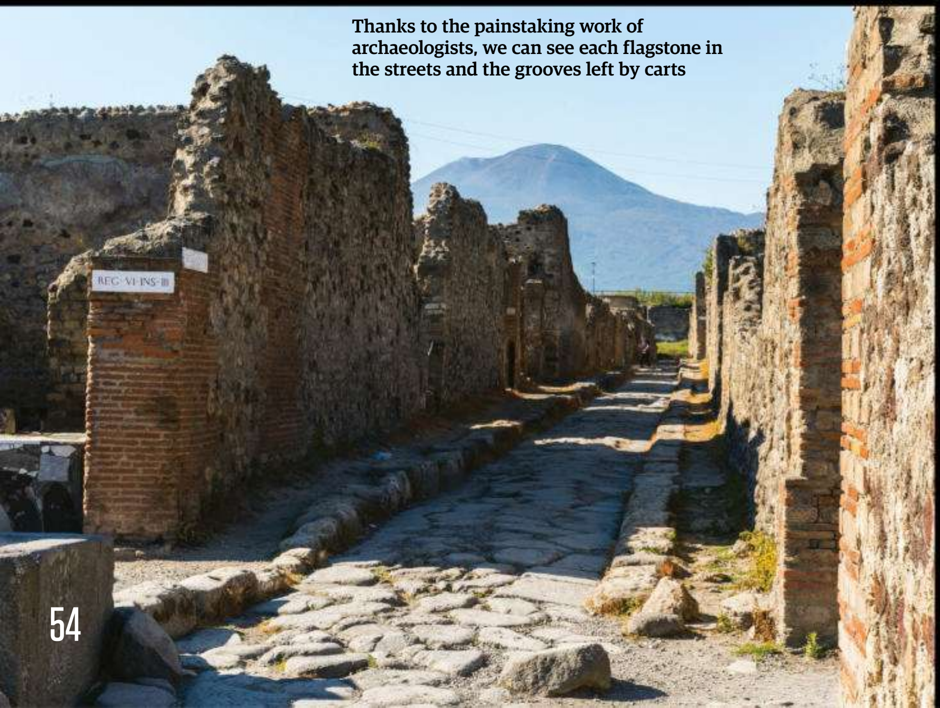
Life in Pompeii was normal - that's perhaps why it's attracted such fame over the years since its discovery. It was as ordinary as Roman towns got, with an amphitheatre, baths and graffiti-covered walls. Thanks to the preservation caused by the eruption in 79 CE, we know how houses were laid out, the names of some of the homeowners, and how people spent their free time. It's thanks to Pompeii that we know about Caecilius and his family, made famous by a Doctor Who episode but who have lived on in the first book of the Cambridge Latin Course that's still used to teach Latin to secondary school children in Britain today.

But Pompeii wasn't the image of perfection - every few years, tremors would cause a little bit of trouble. It usually wasn't enough for people to pack up and leave (perhaps they should have, but they didn't really know they were at the foot of a volcano), but from time to time it would cause some disruption and destruction. On 5 February 62 CE, that's exactly what happened. Vesuvius awoke underground and the rumbles were felt in Neapolis (modern-day Naples), and some of the buildings were damaged. Pompeii wasn't so lucky.

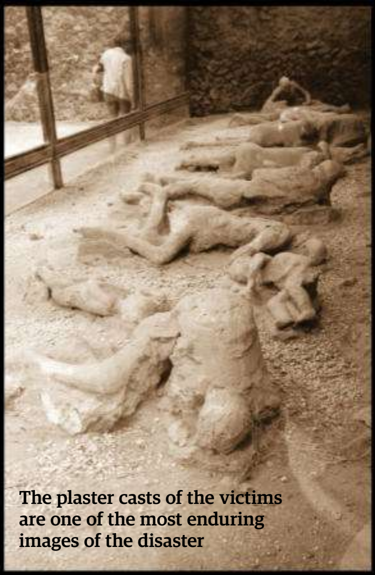
Parts of the thick city walls crashed to the ground and temples crumbled. Parts of the town were ravaged by flames and even the sheep couldn't escape - grazing in the countryside nearby, they choked on the poisonous fumes. The aqueducts that provided water to the town were destroyed and the bridge over the nearby River Sarno collapsed. No one knows how many people died but it's estimated that hundreds, if not thousands, perished. This time, flocks of people left the city - why should they stay in a town that was falling down around them? They'd be better off taking their families and their trades elsewhere. Little did they know what a good move that would be in the long run.

Meanwhile, those who stayed behind tried to rebuild. City walls were rebuilt and temples were repaired. Water began flowing to the city once more and the improvements were spurred on when Nero came to visit in 64 CE. In fact, Nero's visit was a joyous occasion - the ban on gladiator fights was lifted for the imperial visitors. It had been five years since Pompeii had hosted a gladiator match - after they'd rioted and fought with neighbouring Nucerians in 59 CE, they'd been banned from holding any bouts by Nero himself.

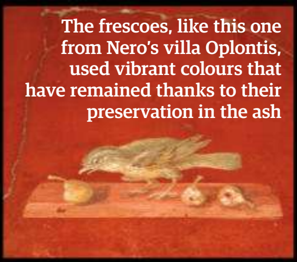
After that, life went back to normal. Slowly but surely, the remaining Pompeiians rebuilt their



Thanks to the painstaking work of archaeologists, we can see each flagstone in the streets and the grooves left by carts

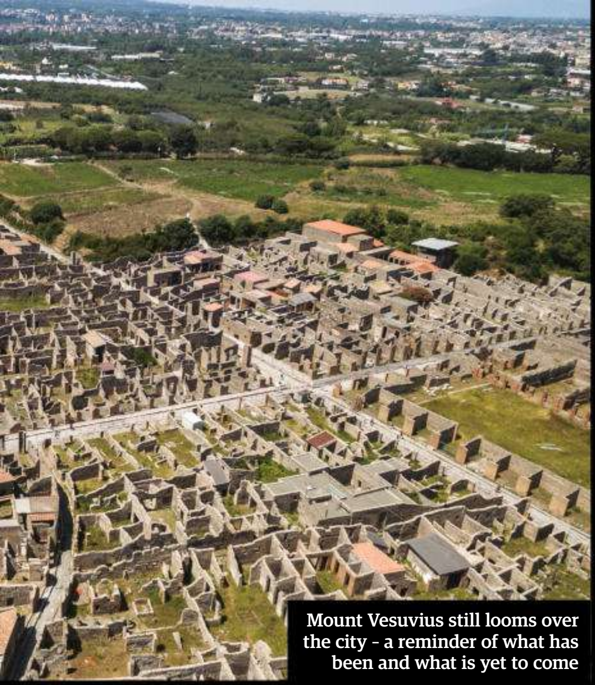


The plaster casts of the victims are one of the most enduring images of the disaster



The frescoes, like this one from Nero's villa Oplontis, used vibrant colours that have remained thanks to their preservation in the ash

Graffiti was commonplace in Pompeii, and a lot of it has been preserved



Mount Vesuvius still looms over the city - a reminder of what has been and what is yet to come

city and carried on. What else was there for them to do? If only they knew that it would have been in vain.

There was nothing special about the year 79 CE. The emperor Vespasian did die at the start of the summer, but that wasn't an event that would impact the lower classes much except for a different head on their coins. Rome's Colosseum wasn't due to be finished for another year. Life was just plodding along, no different to usual.

That was until the strange events started occurring. The fish that swam in the River Sarno began to float dead on the surface. Springs and wells dried up. The vines on the fertile slopes of the mountain began to wither and die.

In August that year, as always, the citizens celebrated Vulcanalia, worshipping Vulcan, the god of fire. In hindsight, the irony is almost painful. Devotions were made to the deity and the wine flowed as the populace played games and lit bonfires. It was festival associated with phenomena that couldn't be explained - earthquakes, like the ones Pompeii was used to, and fires as well as the strange happenings that were plaguing the bay. Vulcan had to be placated, and the Pompeiians tried as the merriment continued into the dark of the night, only the bonfires providing light. Not a bad way to spend your last night.

The next morning, 24 August, was normal. People were doubtless waking up with hangovers, going about their business in the town when - bang! A deafening sound like a thunderclap echoed through the air. It was a sound no one had heard before - it was the sound of magma bursting through Vesuvius's crater. Smoke began to billow; the mountain was on fire.

We get most of our information about the eruption from Pliny the Younger, who was at home across the bay in Misenum, and what he described was nothing short of a dramatic eruption. Around midday, a tower of black smoke shot 20 kilometres into the sky. People ran around terrified - some headed to the shore, hoping to be rescued, but the volcano was spewing pumice. The rocks raining down from above blocked any access to the town by sea and people were trapped as more citizens tried to make a bid for freedom. As they hurried through the streets, the tremors had started once again, violent enough to collapse entire buildings - at least the buildings that had managed to be rebuilt after the earthquakes in the 60s.

In Misenum, only one thing was on Pliny's uncle's mind: saving the trapped. He ordered his boat to be readied and set sail "with so much calmness and presence of mind as to be able to make and dictate his observations upon the motion and all the phenomena of that dreadful scene". He headed straight for Pompeii and managed to land his boat on the shore. Pliny would never see him again.

After the boat's mooring, the sea began to behave oddly. According to Pliny, it "seemed to roll back upon itself, and to be driven from its banks by the convulsive motion of the earth; it is certain at least the shore was considerably enlarged, and several sea animals were left upon it". Meanwhile the black cloud was growing, and flashes of lightning were added to the mix. In the evening, more pumice rained down on Pompeii, along with a considerable amount of ash. Ceilings buckled under the weight, crushing anyone who was sheltering underneath them. As night approached and the Sun shrank behind the horizon, the dark that swept over the bay was unwelcome. It was the end of the world - those still alive would never see the light of day again.

Children were shouting for their mothers; men were standing with their hands in the sky, wondering why the gods had forsaken them. Had Vulcanalia not been enough? Was there another ritual they should have done?

The dark, dense cloud became destabilised as the night wore on, and the first deadly pyroclastic surge - a river of poisonous gases - hurtled down the mountain at 100 miles an hour, headed straight for Pompeii. Everyone it touched was asphyxiated and they died where they stood. Some were lucky, but their luck was rapidly running out.

ARE WE SURE IT WAS IN AUGUST?

A humble charcoal scribble could drastically change what we know about one of the Roman Empire's most famous events

We were fairly sure we knew almost everything about the eruption of Vesuvius in 79 CE. We knew which cities were destroyed in the blast, the type of eruption that occurred and an extraordinary amount of detail about the individual stages. But now we need to question how much of this is actually true.

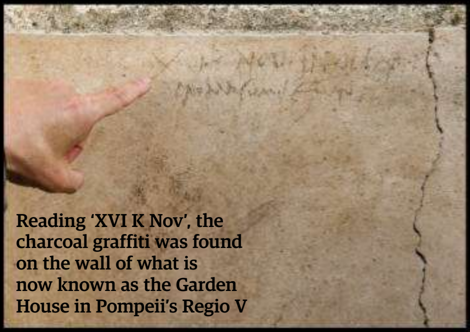
The current excavations in Pompeii's Regio V have uncovered something that has called our understanding into doubt. Scrawled in charcoal on a Roman wall is "XVI K Nov", which means the 16th day before the Kalends of November, or 17 October in our current calendar. While there's no year attached to this piece of graffiti, it's pretty clear that the year was 79 CE.

The house where it was found was in the middle of being redecorated, with some walls covered in plaster and others, such as that one, primed for a coat. It's also worth noting that the graffiti was written in charcoal, which wouldn't have lasted all that long on the wall if it wasn't for the eruption preserving it.

So how accurate are our sources? The written evidence came from Pliny the Younger, who wrote about his uncle's death, and he sounds very sure of the information he presents as he writes, "I have faithfully related to you what I was either an eye-witness of myself or received immediately after the accident happened, and before there was time vary the truth." Having said that, Pliny was writing around 20 years after the fact and we don't have any original copies of his letters - we're relying solely on translations that have changed over time. The date has varied widely from August to November in different versions and transcriptions, and those who consider the later months to be correct have archaeological evidence to back them up, with autumnal fruits and heating braziers have been uncovered in the ruins over the years, which don't really fit with our idea of summer in southern Italy.

Now we're left with the arduous task of trying to figure out when exactly this volcano did explode - did people live two months longer than we previously realised?

Have we stuck with a mistranslation that caused us to have the wrong date for centuries? Perhaps more excavations will unveil some concrete evidence, but until then, we'll just have to wait and see.



Reading 'XVI K Nov', the charcoal graffiti was found on the wall of what is now known as the Garden House in Pompeii's Regio V

© Getty Images, Alamy, Wikipedia

PRESERVING POMPEII

Looking after a city that's over 2,000 years old is far from an easy task

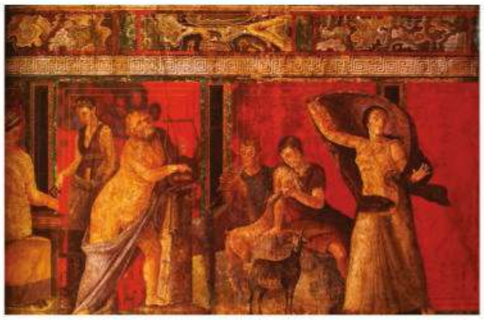
01 REGIO V

The current excavations are taking place here, uncovering a part of the city that hasn't seen the light of day since the eruption in 79 CE.

New technologies like lasers and drones are being used to uncover the half-hectare area in what's been called one of the biggest postwar digs in the world.

02 VILLA OF THE MYSTERIES

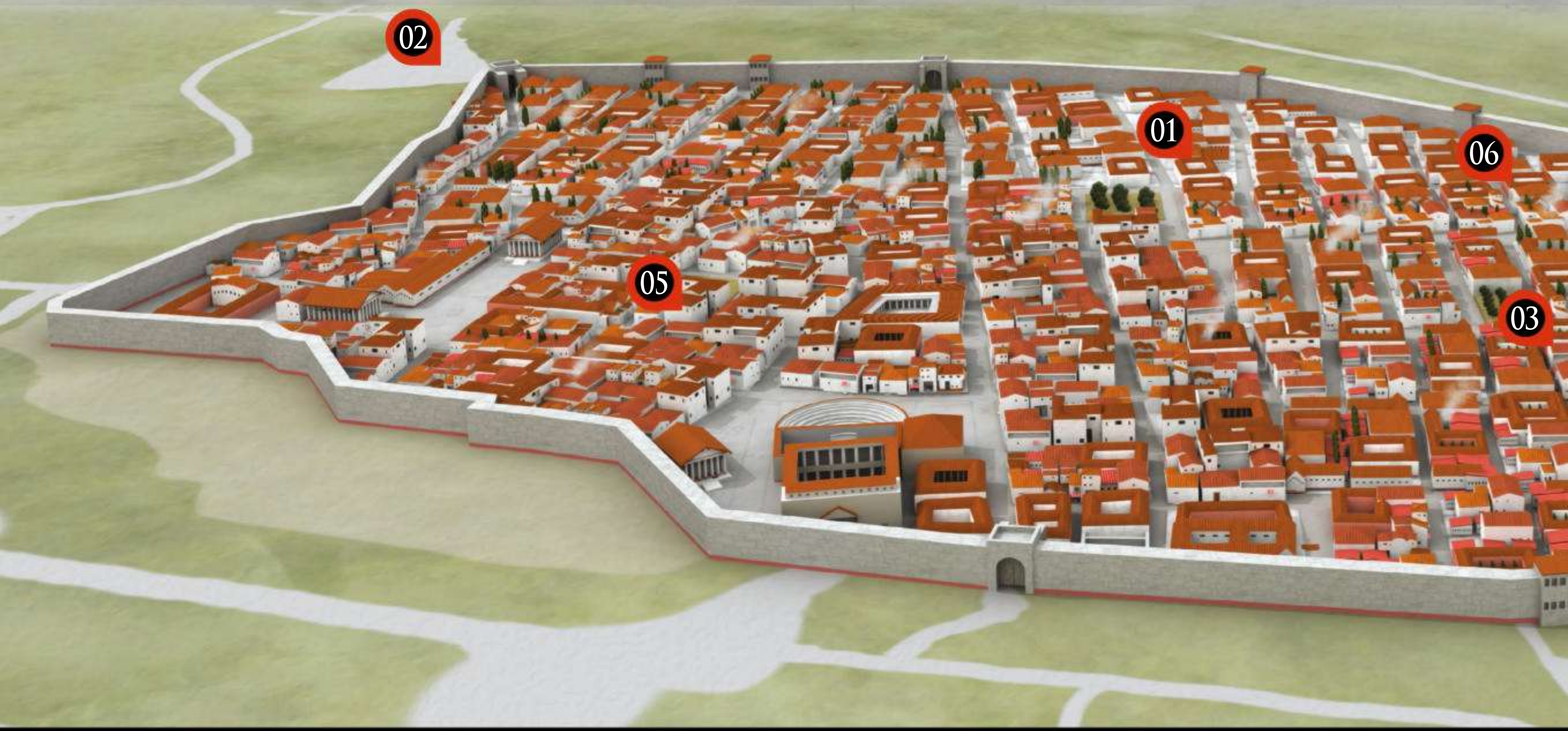
From 1924 to 1961, a considerable amount of excavating took place. One of the buildings to be uncovered in this period was the Villa of the Mysteries, a well-preserved villa on the outskirts of Pompeii. Archaeologists also dug up most of Regio I and II.



03 VIA DELL'ABBONDANZA

While today this street makes up the majority of the 'Pompeii for all' walking route, it was heavily bombed during World War II, hampering excavation efforts. It was around this time that Vesuvius erupted again and parts of the area were evacuated.

> "A RIVER OF POISONOUS GASES HURTLED DOWN THE MOUNTAIN AT 100 MILES AN HOUR"



At midnight, the cloud spilling out of Vesuvius' summit reached 30,000 kilometres – until it collapsed. Another pyroclastic surge raged down the slope, this time headed for Herculaneum. Anyone who hadn't fled was killed instantly.

Morning didn't break the next day. For the most part, the south side of the Bay of Naples was deathly silent. A few people were still alive, huddled in the ruins of their towns under the dark cloud that loomed overhead. Terrified as they were, perhaps they didn't see their final moments coming as the cloud collapsed for the last time, sending the last deadly wave towards Pompeii. Anyone who had been left breathed no more as the force destroyed the buildings around them.

From across the bay, Pliny the Younger could see the darkness begin to dissipate. He wrote: "At last this dreadful darkness was dissipated by degrees, like a cloud or smoke; the real day returned, and even the sun shone out, though with a lurid light, like when an eclipse is coming on. Every object that presented itself to our eyes [which were extremely weakened] seemed changed, being covered deep with ashes as if with snow." We can only imagine his thoughts as he detailed the eruption in excruciating detail – if the wind had changed direction, it could have been his body that was buried.

Over the years, the ash became more compact and layers of dirt formed on top of it. Over time, new cities were built on top of Vesuvius's destruction. Modern-day Pompei, Ercolano and Castellammare di Stabia were all resting atop a huge and heartbreaking tragedy that the world had forgotten. Until 1599, that is.

Domenico Fontana was digging a new course for the River Sarno when he accidentally struck the city. He created some underground tunnels and explored a little, but the story goes that he was shocked by the sexual nature of some of the frescoes – it was the late 16th century, after all – and so he reburied what he'd found. It took 150 years for interest to grow in what he'd discovered.

In 1748, excavations began in the region at a site that was simply named 'Civita', from the Latin word for 'town'. The first phase was effectively a sanctioned looting mission – any treasures like statues and busts were shipped off to Charles III of Spain, although they now have their home in the National Archaeological Museum in Naples. Thanks to fairly primitive archaeological techniques, some of the frescoes and other items were accidentally destroyed.

When the team tried to backfill what they'd discovered, there was uproar from some in the classics community, who argued that what had been found should be preserved, but it wasn't until the early 1800s that methodology began to change.

French rule in the Bay of the Naples had an unexpected side effect: the digs became more organised, and items and people were

04 House of the Gladiators

In 2010, tragedy struck. The House of the Gladiators, which had been struck during the bombing raid in the 1940s, suddenly collapsed after a bout of heavy rainfall in the Bay of Naples. Thought to be a relatively sturdy building, its collapse shocked many.

05 Adverse conditions

Because the city of Pompeii isn't covered by anything, it's open to the elements – and that creates problems for us today. A lot of what has been uncovered by archaeologists over the years has suffered from wind, rain, light damage as well as tourists and even archaeologists themselves.

06 Still underground

Just under one-third of Pompeii still lies unexcavated underground. Arguably, this is the safest place for the buildings as here they can't be damaged by the elements or the people constantly traipsing through. It's uncertain if digs will take place here in the future.

© Getty Images, Alamy, Wikipedia

catalogued. A total of 1,500 workmen were employed to systematically excavate the town from west to east. By 1860, a fair amount had been dug up.

Things changed again when Giuseppe Fiorelli took up the project in 1863. His methods focused on conservation and he ordered his men to start at the top of the houses and work their way down to preserve everything that was discovered. Fiorelli was also the man who divided the town into the sections that we know today, and he did one more important thing. The type of eruption that had occurred in 79 CE had preserved everything extremely well, except for the victims themselves. However, what was left behind of them were holes in the shape of their bodies when they died. Fiorelli made plaster casts of these holes, which are now the images most associated with Pompeii.

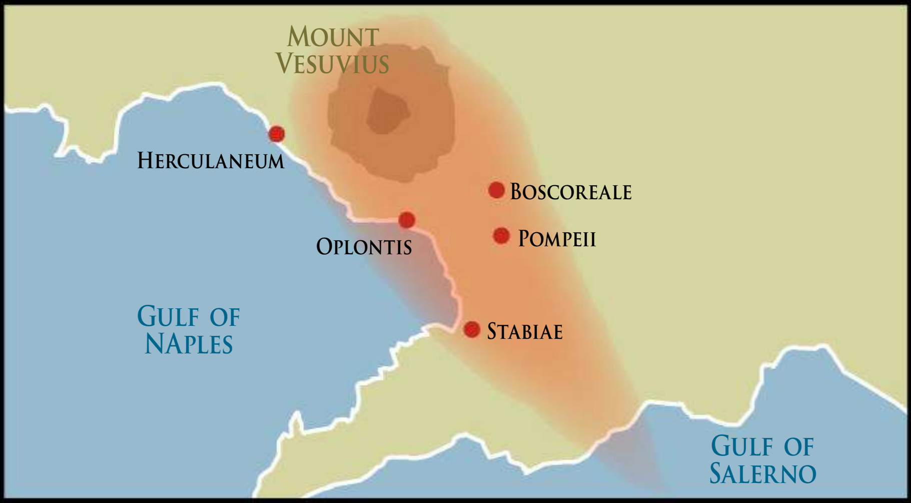
You could say that the rest is history, but it's history that keeps on being discovered as excavations are taking place with more and more evolved archaeological techniques. The digs have never really stopped and a new area, Regio V, is currently in the process of being uncovered. Skeletons have been found, as well as walls painted a vibrant red and new buildings like the House of Jupiter. New techniques are being used like lasers and drones, and the plan is to eventually open the area up like the rest of the site.

The future of Pompeii looks brighter than its past. With international interest in the city, it attracts millions of visitors each year who come to walk in the footsteps of those who lived and died in the same spot almost 2,000 years ago. However, there's still a problem – something catastrophic.

Vesuvius, the volcano that has always loomed ominously in the background, is supposed to erupt every 20 years or so. It hasn't since March 1944, and the next time it blows is supposed to be an event akin to that infamous deadly ordeal of 79 CE. Pompeii, Herculaneum and the other ancient towns in the area could be buried again, alongside the sprawling metropolis of Naples or the holiday destination of Sorrento on the other side of the bay. Will people be rediscovering our cities hundreds of years from now, walking where we walked? Only time will tell.

This skeleton of one unfortunate man was discovered in 2018

THE ERUPTION IMPACT



STABIAE Population: Unknown

Stabiae's excavation was actually begun in the 1950s by a schoolteacher, a janitor and an unemployed mechanic.

POMPEII Population: 15,000

It was Pompeii that bore the brunt of the eruption, with most of the town destroyed and the people killed as wave after wave of deadly gas headed towards them.

OPLONTIS Population: N/A

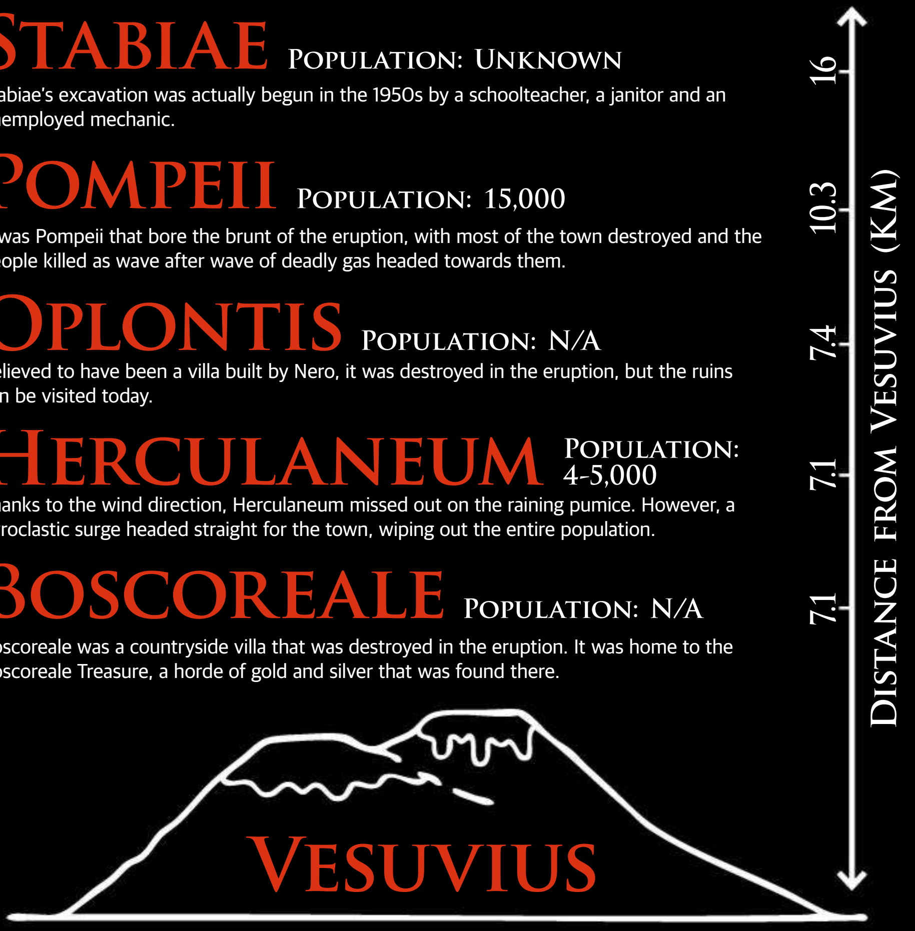
Believed to have been a villa built by Nero, it was destroyed in the eruption, but the ruins can be visited today.

HERCULANEUM Population: 4-5,000

Thanks to the wind direction, Herculaneum missed out on the raining pumice. However, a pyroclastic surge headed straight for the town, wiping out the entire population.

BOSCOREALE Population: N/A

Boscoreale was a countryside villa that was destroyed in the eruption. It was home to the Boscoreale Treasure, a horde of gold and silver that was found there.



The volcano's eruption sent a tower of billowing black smoke 30,000 kilometres into the air at its peak, with pumice raining down on the land below. The eruption was so strong that it caused a simple volcano to turn into a stratovolcano – the summit is now situated inside a crater.

Erupted on:
24 August 79 CE

1281 metres high

This is it's current height – it changes after each eruption and before the one in 79 CE it was much shorter as the force turned it into a stratovolcano

POMPEII CASTS

Discover how the victims of the volcanic eruption have been preserved

After being lost for 1,500 years, Pompeii was rediscovered in 1599 and almost 150 years later, in 1748, a wide-scale excavation of the city began. As archaeologists were digging through the volcanic debris, they noticed distinct cavities in the lava, some of which contained human bones. They soon realised that these were perfect moulds of the dead, left behind after their bodies had decomposed. At first they couldn't work out how to preserve them, but following his appointment in 1863 the director of the excavations, Giuseppe Fiorelli, came up with an ingenious solution. He directed the archaeologists to pour plaster into the cavities so that it would set to form exact replicas of the victims at the moment of their death. It was a difficult process, as the plaster had to be mixed to exactly the right consistency to ensure that it was thick enough to support the skeleton but not so thick that it destroyed the fine details of the mould. When they chipped away at the surrounding rock, the final casts were revealed, some featuring intricate details of the victims' hairstyles, clothing and facial features.

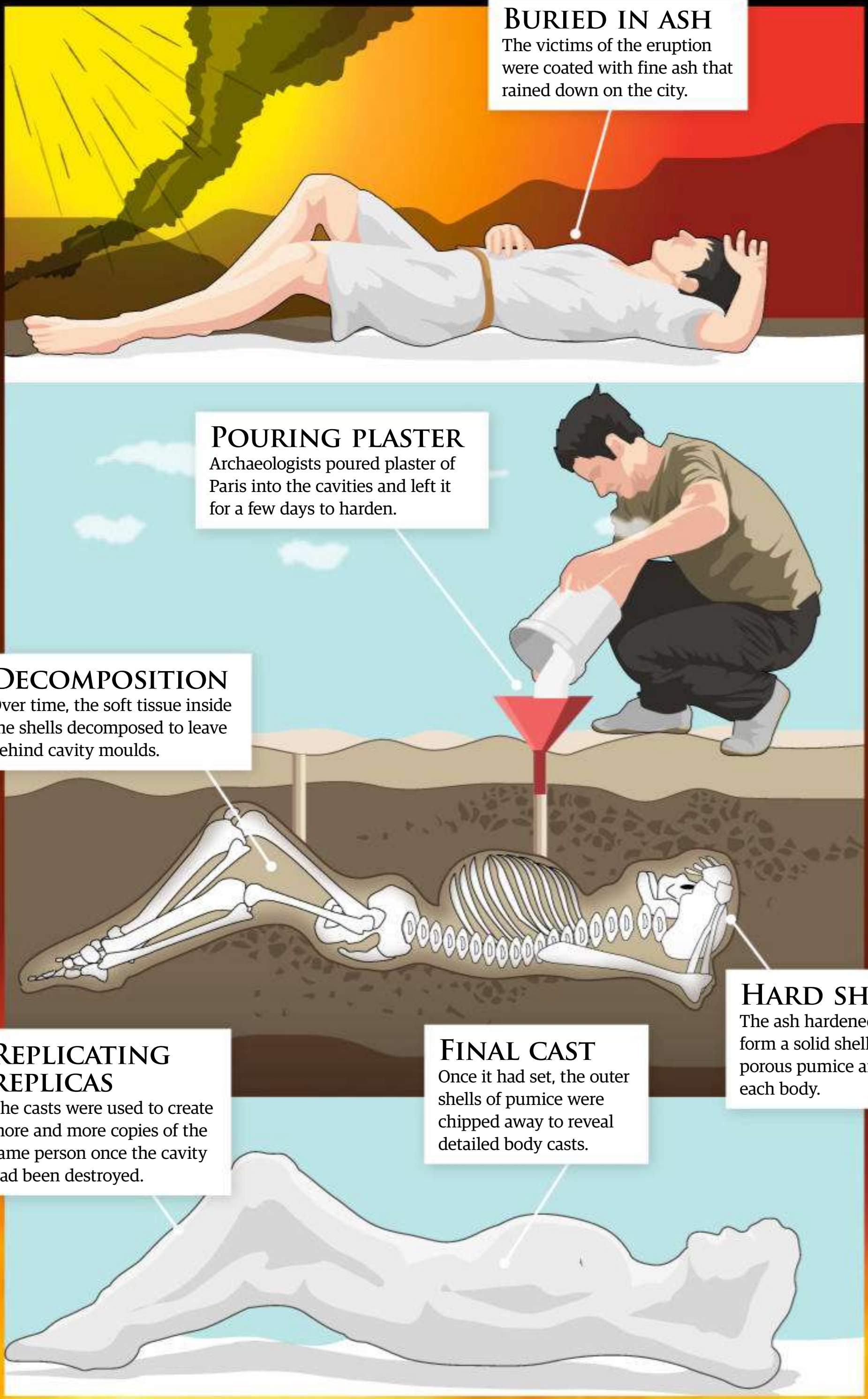
Of the 1,150 bodies discovered at Pompeii, around 100 have been preserved in this way, providing a unique insight into the life and death of the city's residents. Nowadays, modern techniques like 3D scanning have even enabled scientists to create digital images of what the victim's actually looked like, truly bringing them back to life almost 2,000 years after they met their cruel fate.

> It wasn't just human victims of Pompeii that were preserved. Casts have also been made of a dog and a pig

The famous preserved Pompeii 'bodies' are actually plaster casts of the cavities left by the victims

RESTORING THE DEAD

Discover how archaeologists created lifelike casts of Vesuvius' victims



BURIED IN ASH
The victims of the eruption were coated with fine ash that rained down on the city.

POURING PLASTER
Archaeologists poured plaster of Paris into the cavities and left it for a few days to harden.

DECOMPOSITION
Over time, the soft tissue inside the shells decomposed to leave behind cavity moulds.

HARD SHELL
The ash hardened to form a solid shell of porous pumice around each body.

REPLICATING REPLICAS
The casts were used to create more and more copies of the same person once the cavity had been destroyed.

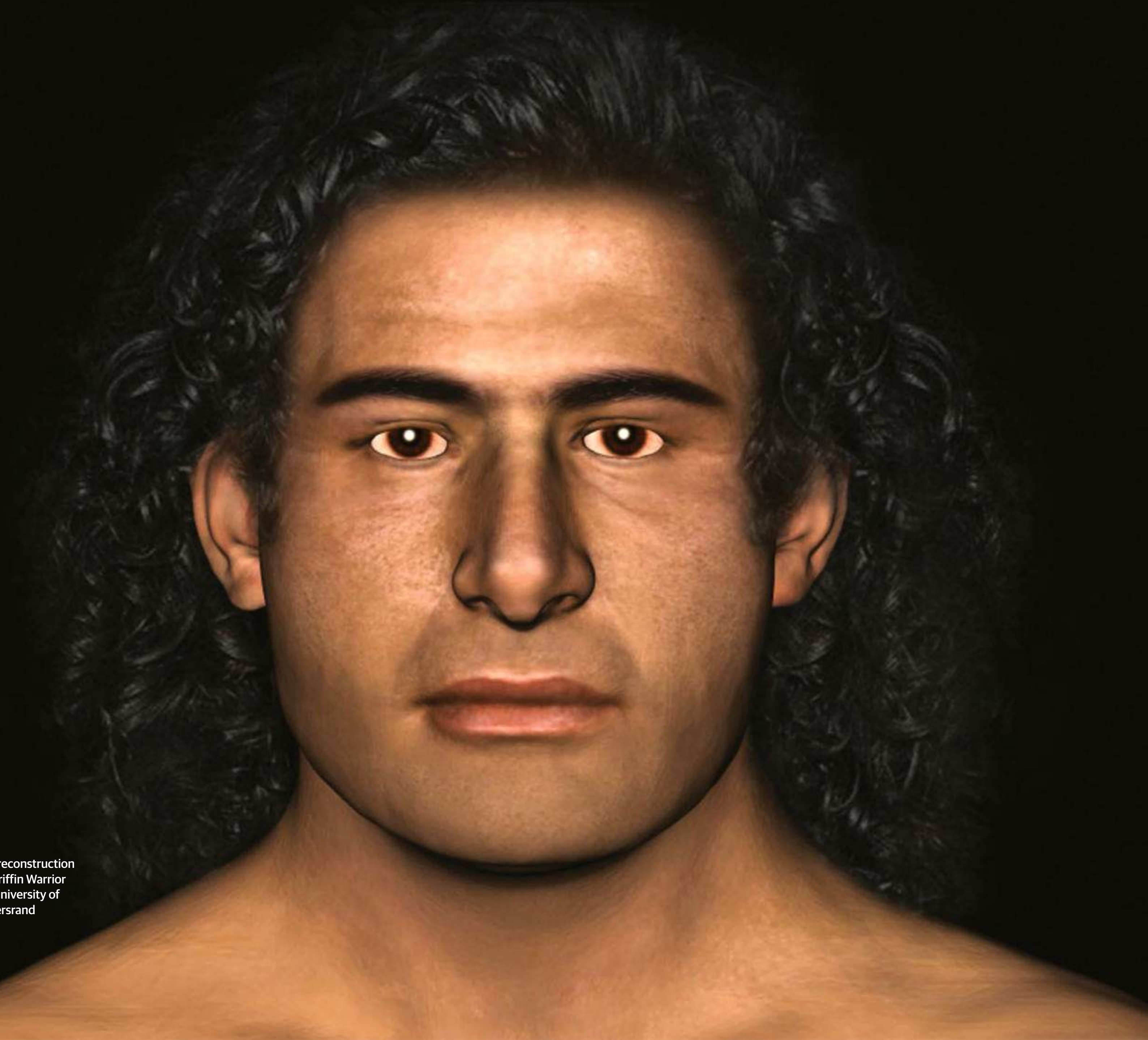
FINAL CAST
Once it had set, the outer shells of pumice were chipped away to reveal detailed body casts.

© Getty Images; Thinkstock; Illustration by Ed Crooks

Grave of the GRIFFIN WARRIOR

The discovery of the treasure-filled grave of a warrior buried in Greece 3,500 years ago continues to astonish archaeologists

Written by Rebecca Ford



A facial reconstruction of the Griffin Warrior by the University of Witwatersrand

Excavations at the site have continued to yield fascinating objects since the first discovery

It is the stuff that archaeological dreams are made of – a 2015 dig that uncovered the intact grave of a Mycenaean warrior who was buried around 1500 BCE, his tomb filled with an extraordinary range of treasures including silver cups, a sword, golden rings, precious stones and even a bronze mirror. Not only that, but the discovery is considered to be of such immense historical significance – with the potential to deepen and inform our whole understanding of the ancient world – that it has been hailed by the Greek Ministry of Culture as the, "…most important tomb to have been discovered in 65 years in continental Greece." The grave is situated in a field near the famed Palace of Nestor at ancient Pylos – which is near the modern day town of Chora in Messinia – however, it predates the palace by several hundred years.

The earliest advanced civilisation in Europe is said to date back to around 2600 BCE with the Minoans of the island of Crete. Named after the mythical King Minos, they developed Linear A – an early script, traded widely across the Mediterranean and Aegean – and were skilled artists, metalworkers and makers of ceramics. They are widely portrayed as gentle merchants and agriculturalists who revered female deities and built sophisticated cities with stone roads, sewage systems and

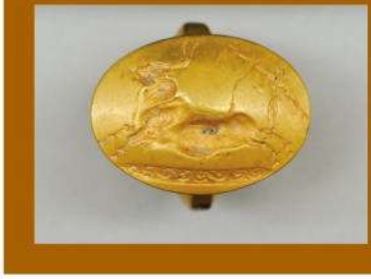
> "Most important tomb to have been discovered in continental Greece"

THE KEY FINDS

Unlike most Mycenaean graves, there were no ceramics, but glittering gems, carved stones and weaponry instead

The rings

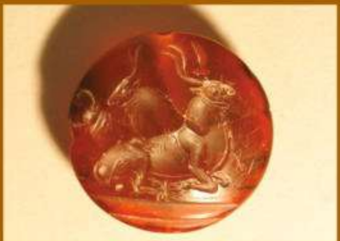
Four rings were found, made of layers of gold and etched with scenes depicting typically Minoan motifs. One shows a leaping bull, another depicts a woman offering a bull's horn to a goddess who is seated on a throne and holding a mirror. Then there are five finely-dressed women at a seaside shrine, while the fourth shows a woman holding a staff with two birds on either side. The Cretan artistry provided excellent evidence for cultural exchange.



Seal stones

Archaeologists discovered more than 50 seal stones (a sort of amulet) in the grave around the warrior's skeleton. These seal stones were adorned with Minoan-style carvings that were depicting various things such as goddesses, lions, bulls, reeds and altars. It is thought that they were originally made in Crete.

The sheer number of stones alone is highly unusual in a grave of this type and attests to the high social status of the Griffin Warrior.



Sword & dagger

The grave contained a number of different weapons including a stunning 91-centimetre-long sword with a hilt that is made of ivory and gold. It was on the left side of the grave, by the man's chest.

Beneath it was a dagger with a hilt, intricately decorated with gold. The positioning of these items within the grave must have been of some symbolic importance, perhaps reflecting his skill as a fighter or his political or social power.

The mirror

The presence of a traditionally feminine item such as the bronze mirror is highly unusual in a male grave – at least in the sites that have been excavated to date.

The bronze mirror has an ivory handle and was placed above the Griffin Warrior's legs – this position may be suggesting that the mirror might hold some special significance. There could be some kind of allusion to the second of the golden rings in which a goddess holds a mirror.

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grand palaces. The largest known Minoan site is the palace of Knossos, on Crete. However, by around 1450 BCE, their influence seems to have given way to that of the Mycenaean culture of the mainland – perhaps, many scholars think, after the Mycenaeans invaded and conquered Crete and the palace of Knossos was burned.

The name Mycenaean derives from the fortified palace of Mycenae in the Peloponnese, which was excavated in the 1870s by German archaeologist Heinrich Schliemann, a pioneer who also uncovered Troy. Uncovering a wealth of artefacts including weapons, pottery and treasures made of silver and gold, he identified Mycenae as the palace of King Agamemnon, who was celebrated by Homer as the ruler who led the Greek forces in the Trojan War.

The discoveries attested to the wealth and prosperity of Mycenae, which Homer had referred to as "rich in gold". Schliemann also uncovered a number of shaft graves – deep rectangular tombs that have traditionally been viewed as typical of early Mycenaean practice, later superseded by their characteristic beehive tombs.

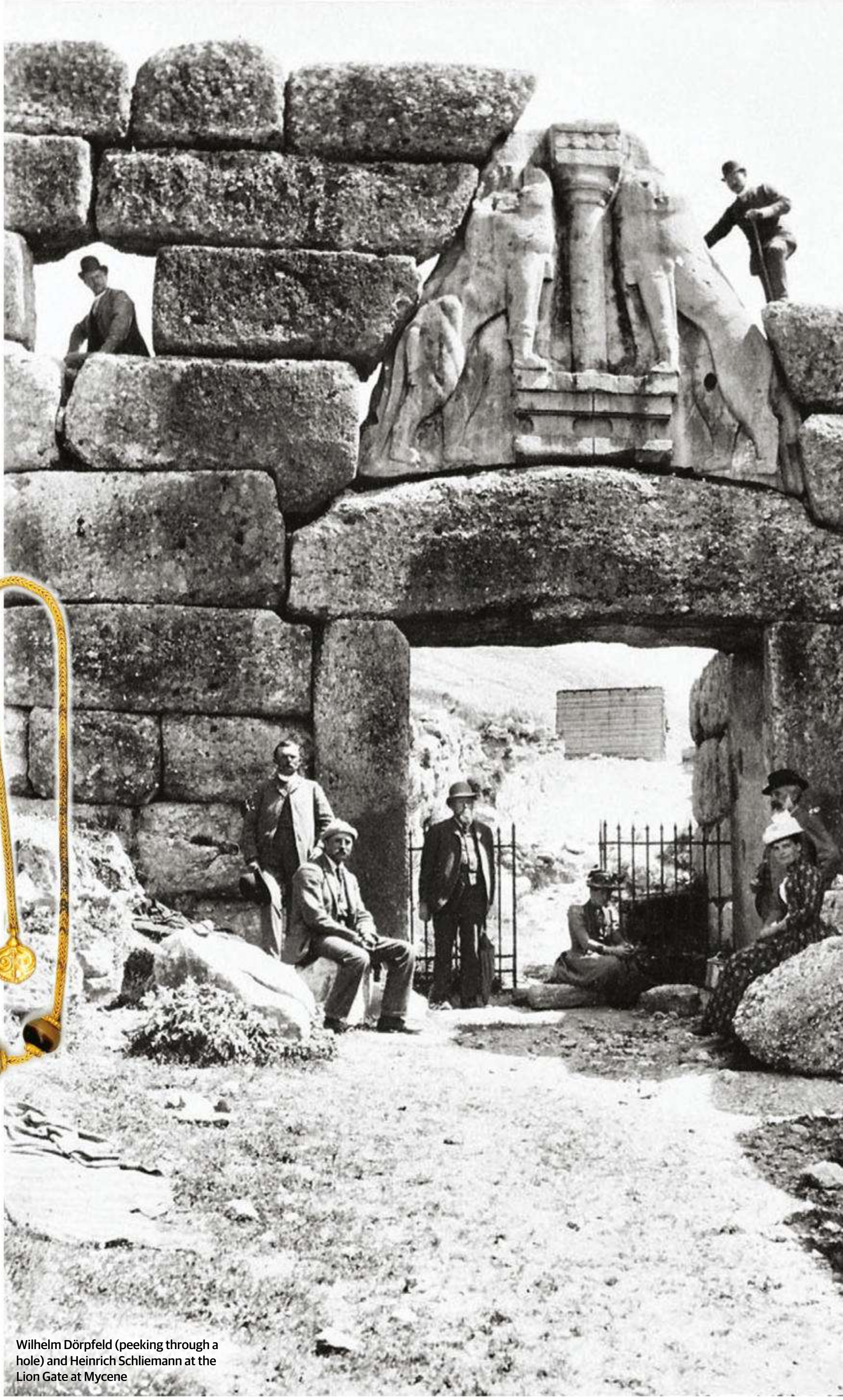
The Mycenaeans built other strongholds across the Greek mainland at Tiryns, Thebes and Athens as well as at Pylos. Their culture, which has traditionally been portrayed as more warlike, male dominated and less artistically sophisticated than that of the Minoans (one academic once described them as "barbarians" in comparison with the Cretans), spread from the Peloponnese across the eastern Mediterranean.

They traded extensively – probably in commodities such as oil and wine, as well as ceramics – and appear to have been skilled engineers, building bridges, fortifications and both drainage and irrigation systems. Their civilisation flourished until around 1100 BCE when it rapidly declined – perhaps, most scholars think, due to waves of invasion during which Mycenaean sites were destroyed and plundered. However, it was Mycenaean culture that provided the roots of Classical Greece, the civilisation immortalised by Homer in The Iliad and The Odyssey.

A necklace with two gold pendants and jewels, found in the grave

Although the Mycenaeans might appear to be very different peoples to the Minoans, there was a degree of cultural interchange – though to what extent is unclear and a long debated issue. "We have known for a century that people on the mainland started importing objects from Minoan Crete," said Professor John Bennet, director of the British School at Athens and professor of Aegean archaeology at the University of Sheffield.

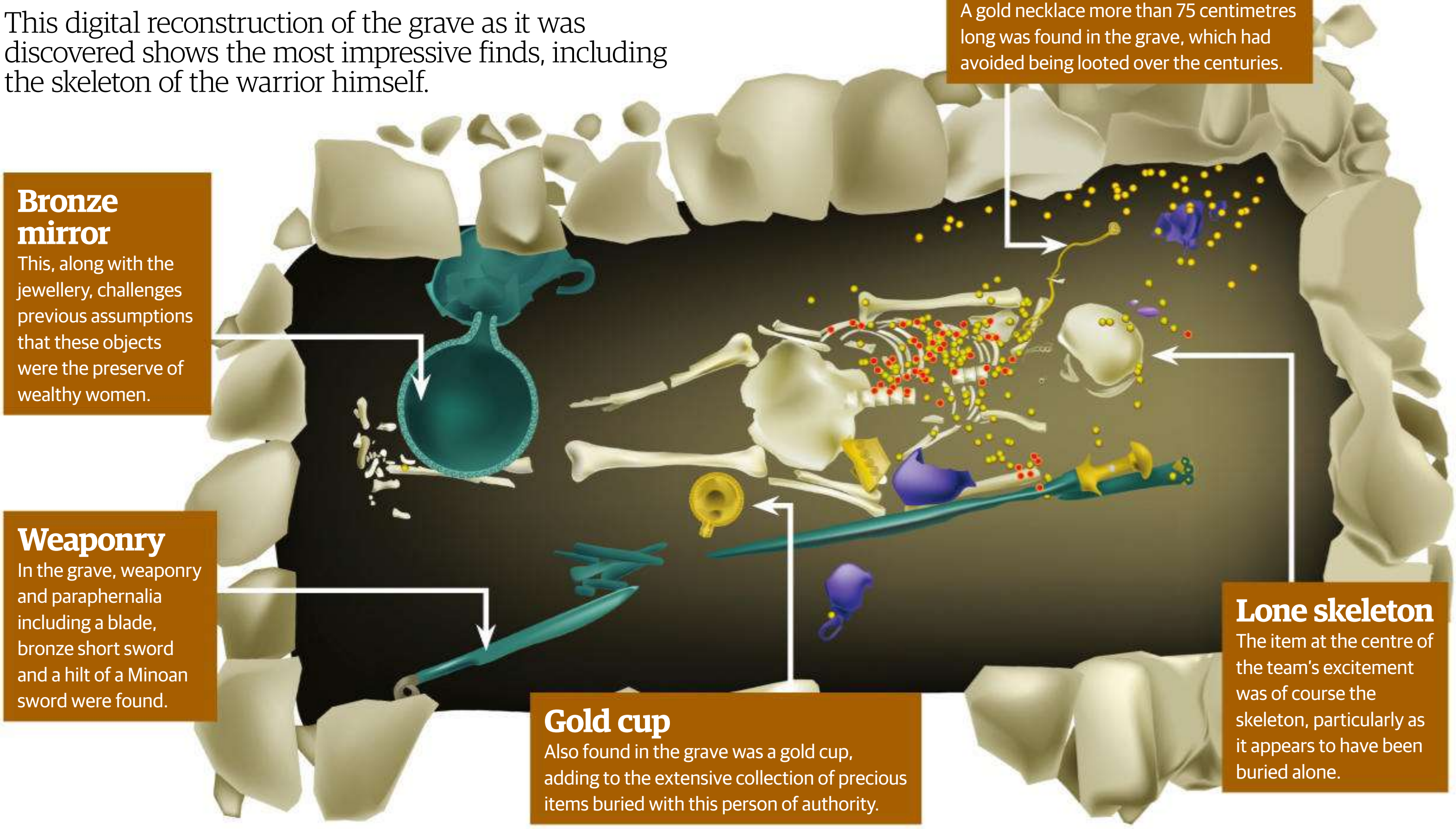
Conclusive evidence for Minoan influence on Mycenaean culture came when Carl Blegen



Wilhelm Dörpfeld (peeking through a hole) and Heinrich Schliemann at the Lion Gate at Mycene

DIGITAL RECONSTRUCTION

This digital reconstruction of the grave as it was discovered shows the most impressive finds, including the skeleton of the warrior himself.



Necklace
A gold necklace more than 75 centimetres long was found in the grave, which had avoided being looted over the centuries.

Bronze mirror
This, along with the jewellery, challenges previous assumptions that these objects were the preserve of wealthy women.

Weaponry
In the grave, weaponry and paraphernalia including a blade, bronze short sword and a hilt of a Minoan sword were found.

Gold cup
Also found in the grave was a gold cup, adding to the extensive collection of precious items buried with this person of authority.

Lone skeleton
The item at the centre of the team's excitement was of course the skeleton, particularly as it appears to have been buried alone.

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of the University of Cincinnati discovered King Nestor's Palace, Ancient Pylos, in 1939. The clay tablets he found, on which Linear B script were inscribed, proved similar to ones found in Knossos, demonstrating a strong cultural link.

In Linear B script, each symbol stands for a syllable. It formed the basis for the Greek alphabet, where a symbol represents a vowel or consonant. Now, the discovery of the Griffin Warrior's tomb looks set to shed new light on this aspect of the history of the ancient world.

The tomb was discovered in May 2015 by Jack L Davis, professor of Greek archaeology at the University of Cincinnati, and Sharon Stocker, his wife and fellow archaeologist who represents the University of Cincinnati in excavations at the Palace of Nestor.

> "The discovery of the Griffin Warrior's tomb looks set to shed new light on this aspect of the history of the ancient world"

They assembled an international team of experts, with the initial intention of searching a field near the palace for evidence of settlement, perhaps domestic dwellings.

They began to dig where some stones were sticking out of the ground and soon realised that they had not uncovered a house, but unexpectedly a grave. Work commenced in earnest and it was not long before Davis and Stocker received a text, "Better come. Hit bronze." The bronze artefacts discovered were just the start. The shaft grave - around 1.5 metres deep, 1.2 metres wide and 2.4 metres long - contained the well-preserved skeleton of a man in his early 30s. The warrior was lying on his back and had been buried in a wooden coffin, which had long decayed, but the grave was otherwise undamaged. The astonished archaeologists soon realised the grave also held

The team delve further into the site in search of fresh treasures a dazzling treasure trove, for the skeleton was surrounded by an extraordinary array of artefacts: there were weapons to his left and at his feet, and jewellery to his right.

Pitchers and other items that had originally rested above the body were on his chest.

The researchers dated the burial to around 1500 BCE, several hundred years before Nestor's palace was built and in the early years of Mycenaean civilisation. Among the weapons was a large bronze sword, with a gold and ivory hilt, and a golden-hilted dagger.

There were cups and pitchers – unusually these were all made of gold, silver and bronze (no mere ceramics for him), delicately etched seal stones (a sort of amulet) and jewels that included a golden chain and pendant, and four gold signet rings.

Thousands of beads made from materials such as amethyst, amber, carnelian, jasper and gold lay beside him, many drilled with holes suggesting that they would once have been strung together to form necklaces. Perhaps to ensure that the warrior looked his best for his passage to the next world, the grave also contained a bronze mirror with an ivory handle and six ivory combs.

The final touch – which gave the man his nickname – was an ivory plaque embellished with the image of a griffin, which lay between his legs. The griffin, a mythological beast with a lion's body and eagle's head, was associated with power. Most Mycenaean graves appear to contain more than one body. "It's extremely unusual to find an undisturbed tomb of a single burial," explained Professor Bennet, who added, "We have also all been astonished by just how many objects it contained." What makes the findings particularly

> "We might well have questioned their authenticity had they not been found in an intact grave"

The progress that had been made on the excavation by late May 2015

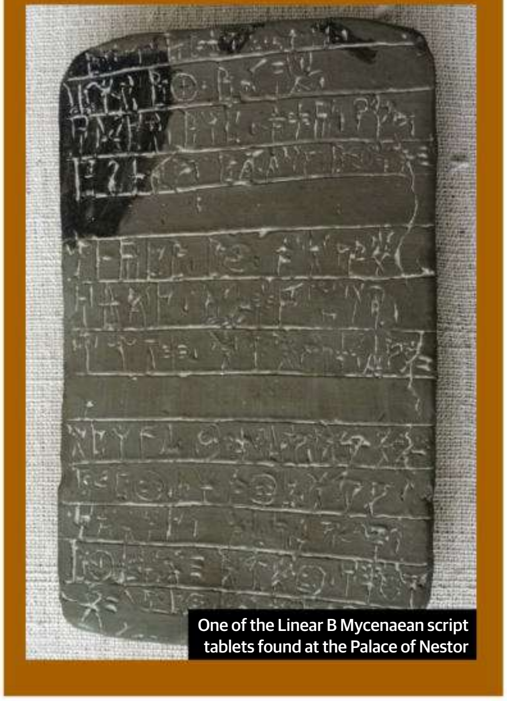
PALACE OF NESTOR

It is the best preserved Mycenaean palace in Greece and has now re-opened after restoration

This impressive complex in the Peloponnese was built around 1300 BCE by King Nestor, ruler of ancient Pylos – who is mentioned by Homer in both *The Iliad* and *The Odyssey* and is reputed to have taken part in the Trojan War.

Perched on a hilltop with glorious views of Navarino Bay, it was an administrative, political and financial hub. In addition to the main palace stood the king's residence – a smaller, older palace – and a large workshop or guardhouse. The residential buildings were two storeys high with 105 rooms on the ground floor alone.

The site was first excavated in 1939 by Carl Blegen of the University of Cincinnati, who discovered a large cache of clay tablets written in Mycenaean Linear B script, an adaptation of Linear A script used by the Minoans in Crete, therefore demonstrating a clear link between the two cultures. Linear B is the precursor to Modern Greek. Excavations resumed after the war in 1952 and continued until the 1960s where the works revealed the presence of a huge throne room with a circular hearth, a brightly coloured geometric floor and walls decorated with fine frescoes. Storerooms were filled with hundreds of wine cups. Perhaps most famous is the bathroom, which boasts a deep, decorated bathtub ideal for luxurious royal soaks. According to legend Nestor's daughter bathed Telemachus here. The complex burned down in 1200 BCE and was never rebuilt. The palace has now re-opened to visitors after a three-year restoration, costing €2.5 million.



One of the Linear B Mycenaean script tablets found at the Palace of Nestor significant is that although buried on the mainland, the vast majority of them appear to have come from Minoan Crete - or at least have been made in Minoan style. They therefore provide evidence for extensive cultural interchange and a strong Minoan influence on early Mycenaean society.

Did the Griffin Warrior himself come from Crete? Was he a Mycenaean who had looted goods from the island or had he had them custom-made locally in Minoan style? Had the items been imported by traders, supplying mainland markets with desirable Minoan goods?

As yet, no one can be sure. While the presence of martial items, such as the sword, suggests he was a warrior, the vast amount of jewellery confuses the picture, as it was commonly believed that such trinkets were only buried with wealthy women. One explanation could be that the jewels were offerings to a deity. Then there are the many seal stones, small gems used as amulets, which might suggest he was a religious leader. He was however, certainly wealthy, and certainly important.

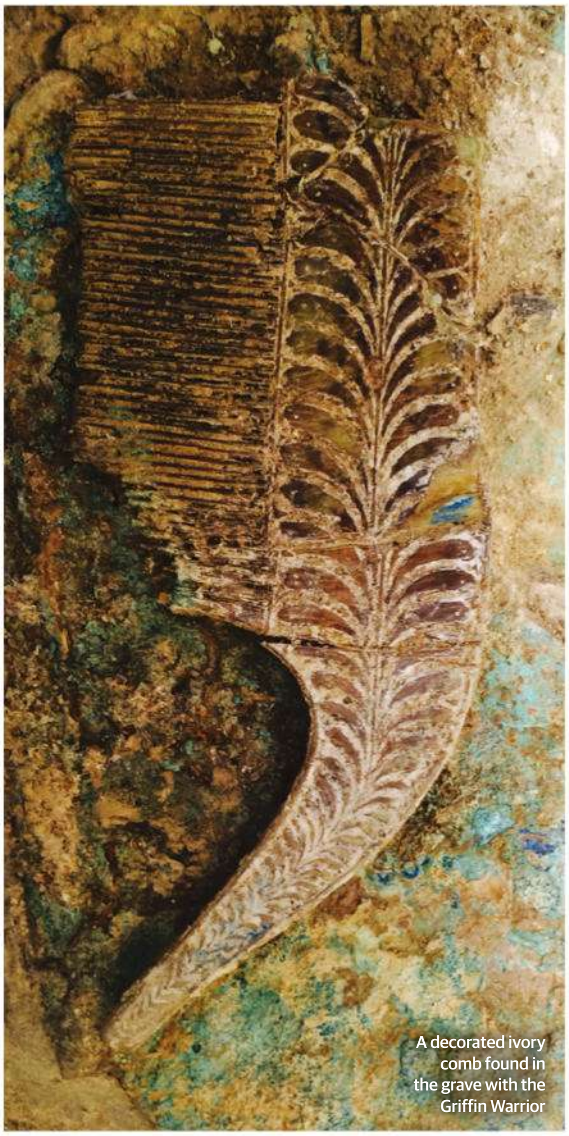
The extent to which the grave goods exhibit Minoan imagery, and showcase Minoan art, is fascinating. "The four rings bear scenes of such distinctively Minoan iconography that we might well have questioned their authenticity had they not been found in an intact grave," said Professor Bennet. One ring, for instance, shows a leaping bull - a motif commonly associated with Minoan culture and one that gave rise to the legend of the Minotaur. Thenwe comet to the seal stones, which are intricately decorated with typically Minoan scenes - goddesses, lions, bulls and men indulging in their favourite Minoan sport of leaping over a bull's horns.

Although we know little about him, we do have some idea of the appearance of this 3,500-year-old man, as specialists at the University of Witwatersrand have performed a facial reconstruction, revealing the warrior was dark and handsome with strong features and a powerful neck. Researchers will soon carry out DNA analysis on the skeleton of this mysterious man. His teeth are in good condition and so they may yield information about his genetic background, while tests should also provide an insight into his diet and help to determine the cause of death. If plant material is found, it might be able to be used to provide a radiocarbon date for the burial. The grave has now been sealed over and the artefacts taken away for careful scientific analysis.

As Professor Bennet explains, though, the grave is not just significant for its contents but also for the very nature of the tomb itself.

It has traditionally been thought that the early Mycenaeans buried their dead in shaft graves but that the practice was later superseded by the use of beehive tombs.

However the Griffin Warrior is buried in a shaft grave not far from a beehive tomb that was excavated by Carl Blegen in the 1950s - and that beehive tomb was built before the Griffin Warrior was laid to rest. This discovery has caused scholars to question much of what is known about this period in Greek history. It will also continue to captivate archaeologists and the public alike thanks to the mystery surrounding the identity of the swarthy stranger from another age; a man who was ceremonially buried with possessions that even he - powerful though he undoubtedly was - could not take with him when he died.



A decorated ivory comb found in the grave with the Griffin Warrior

The excavated skull of the Griffin Warrior

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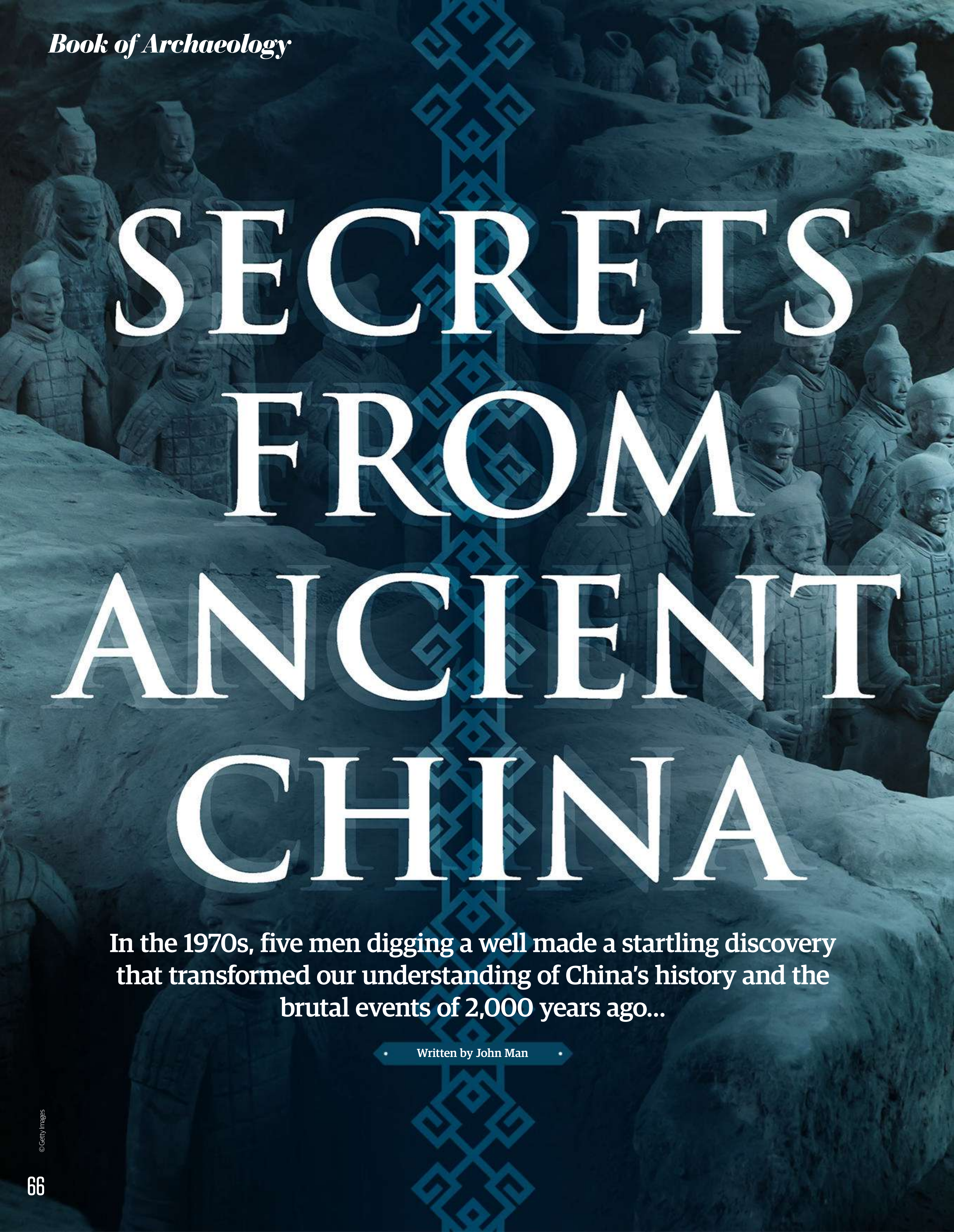

SECRETS FROM ANCIENT CHINA

In the 1970s, five men digging a well made a startling discovery that transformed our understanding of China's history and the brutal events of 2,000 years ago...

Written by John Man

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March, 1974. Orchards and fields near Xian, north-central China. In the background is a conical hill. We're in an orchard, but the trees are bare and the grass is dusty. There's a drought. Five peasants, the Yang brothers, are digging a well. They are two metres down, taking turns to dig while the others haul out soil in baskets. Suddenly the one in the pit, Yang Zhefa, shouts: "An earth-god!"

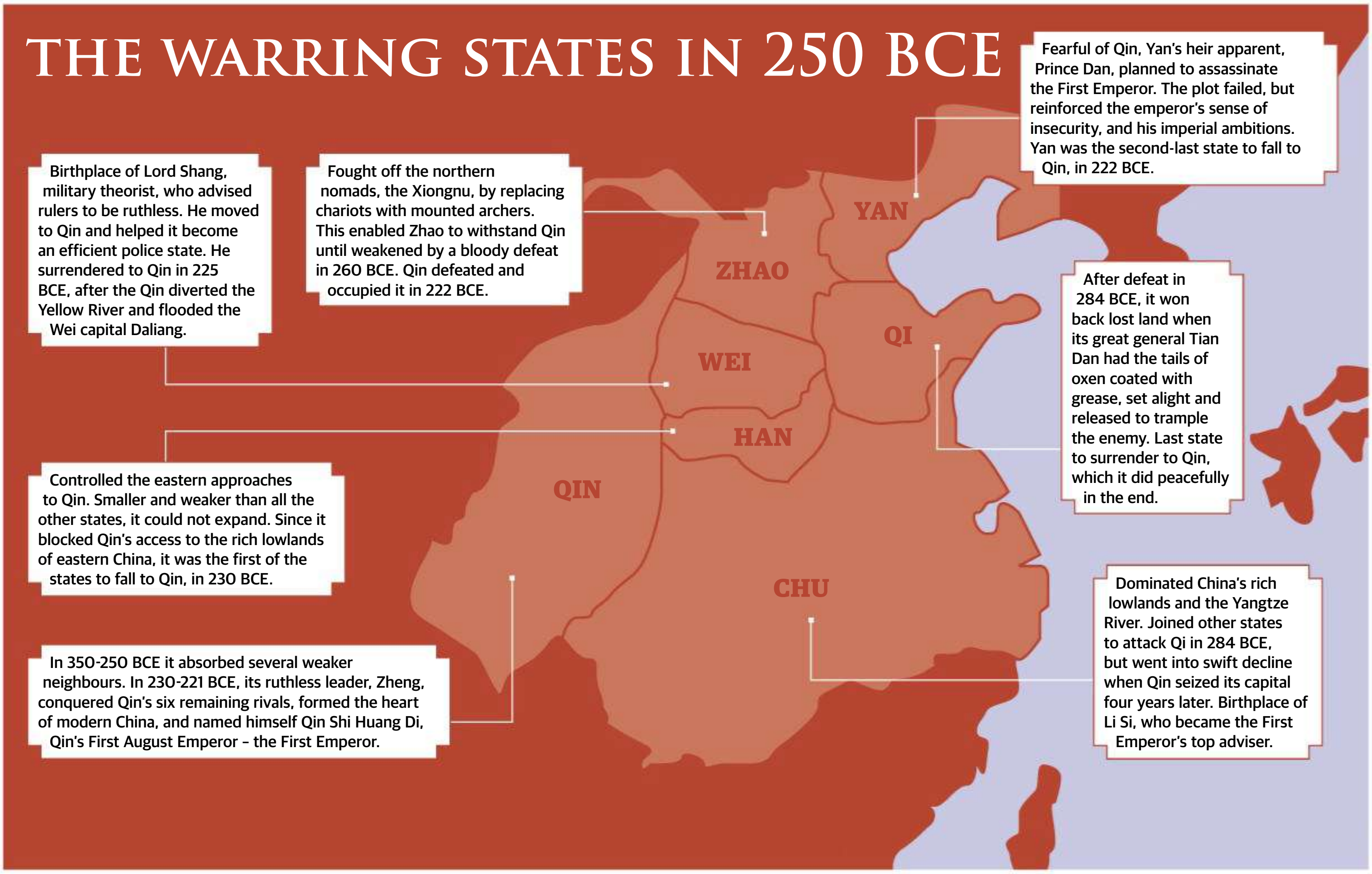
Sticking out of the soil is a head made of clay – it has two eyes, long hair tied in a bun and a moustache. This is bad luck, because it's underground, where the dead live. The men toss the head aside and keep digging, but some local kids see it and throw stones at it. A few adults arrive. An old woman picks up the head, takes it home and puts it on her table. Meanwhile, the Yang brothers make other intriging finds including bricks, bits of bronze and some arrowheads.

A month later, a 24-year-old archaeologist named Zhao Kangmin, who's working in a local museum, hears about the finds. He gets on his bike, rides to the orchard and finds the Yangs, still busy on their well. By now there are more clay bits on their heap of rubbish: legs, arms, two more heads. He takes charge of matters and has the finds brought to his museum in nearby Lintong. He guesses they are important, as he knows the historical background.

Over 2,000 years ago, this was the heartland of the state known as Qin (pronounced Chin). That hill in the background, a massive pyramid of earth, was the tomb of the emperor who united China's warring states into a single nation. Kangmin, like most educated people, knew all about the First Emperor, because the story of his rise to power was told in dramatic terms by Sima Qian, one of China's greatest historians, who was writing a century after the events that he describes.

Qin had been one of seven warring states, all with their own armies and systems of government, rivalling each other. But Qin had made itself the most powerful by becoming a military dictatorship, a police state in which

THE WARRING STATES IN 250 BCE



Fearful of Qin, Yan's heir apparent, Prince Dan, planned to assassinate the First Emperor. The plot failed, but reinforced the emperor's sense of insecurity, and his imperial ambitions. Yan was the second-last state to fall to Qin, in 222 BCE.

Birthplace of Lord Shang, military theorist, who advised rulers to be ruthless. He moved to Qin and helped it become an efficient police state. He surrendered to Qin in 225 BCE, after the Qin diverted the Yellow River and flooded the Wei capital Daliang.

Fought off the northern nomads, the Xiongnu, by replacing chariots with mounted archers. This enabled Zhao to withstand Qin until weakened by a bloody defeat in 260 BCE. Qin defeated and occupied it in 222 BCE.

After defeat in 284 BCE, it won back lost land when its great general Tian Dan had the tails of oxen coated with grease, set alight and released to trample the enemy. Last state to surrender to Qin, which it did peacefully in the end.

Controlled the eastern approaches to Qin. Smaller and weaker than all the other states, it could not expand. Since it blocked Qin's access to the rich lowlands of eastern China, it was the first of the states to fall to Qin, in 230 BCE.

Dominated China's rich lowlands and the Yangtze River. Joined other states to attack Qi in 284 BCE, but went into swift decline when Qin seized its capital four years later. Birthplace of Li Si, who became the First Emperor's top adviser.

In 350-250 BCE it absorbed several weaker neighbours. In 230-221 BCE, its ruthless leader, Zheng, conquered Qin's six remaining rivals, formed the heart of modern China, and named himself Qin Shi Huang Di, Qin's First August Emperor – the First Emperor.

> "There are records of cruel punishments, including being torn apart by carriages"

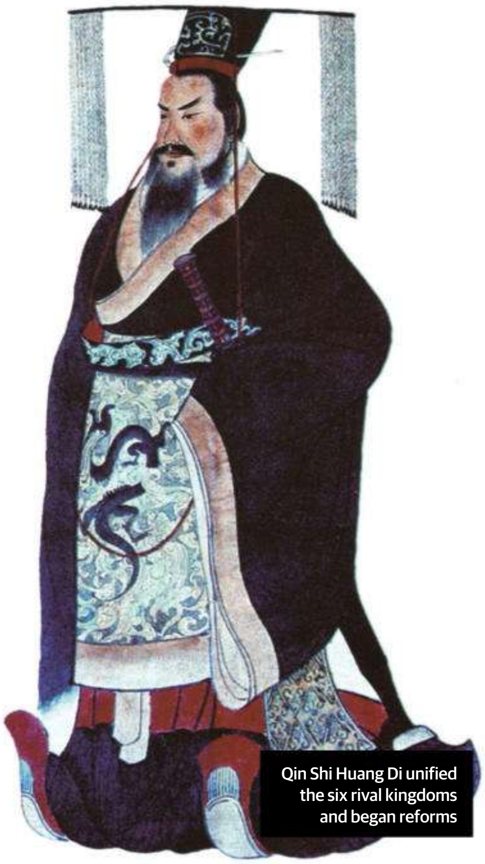
the ruler had total control. For example, as one chronicler recorded, "Anyone who failed to report criminal activity would be chopped in two at the waist." The system worked. By 238 BCE, Qin was a rich, self-confident kingdom under the control of a new 22-year-old ruler, King Zheng.

Zheng was fanatical about security. He thought he could make Qin even safer by using his tough, mobile army to extend his control over the other six states. To ensure victory, he turned his nation into a war machine fuelled by good food supplies, ruthless tax gatherers, military service for almost all men, and highly trained soldiers.

We have no details of his conquests, which started in 230 BCE, but in nine years he defeated all the other six kingdoms. In 221 BCE, he was master of a unified China, which gets its name from his kingdom. This was not China as it is today, just the central and northern bits, but ever since then, the idea of unity has been at the heart of Chinese history. Zheng gave himself a suitably grand title: Qin Shi Huang Di, meaning Qin (or China) First August Emperor. Non-Chinese usually call him the First Emperor.

Now he needed to weld his conquests together with a revolution in government and vast building projects that would control his people and keep enemies out. First, he ordered a revolution in administration, setting up a government of 36 regions, each divided into counties, and each with both civil and military governors, overseeing tax collectors and judges. All the different systems of law, money, weights, measures and even styles of clothing were standardised. Dissent of any kind was crushed.

According to Sima Qian, when a scholar dared criticise the emperor for breaking with tradition, Prime Minister Li Si pointed out that the roots of rebellion lay with scholars and books: "Those who use the past to criticise the present should be put to death!" So the royal archives "were all destroyed. How regrettable!" – burned, said Sima Qian. This episode, known as the Burning of the Books, is generally accepted as true, as is another claiming



Qin Shi Huang Di unified the six rival kingdoms and began reforms

Many of the damaged terracotta warriors have been meticulously pieced back together

The level of detail in the terracotta statues' design is astounding

Every terracotta warrior discovered so far has a unique feature

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THE EMPEROR'S GREATEST ACHIEVEMENTS

Unification

The First Emperor is referred to as China's First Unifier. There have been many others since, the latest being Mao Zedong, who created Communist China from the ruins of war and revolution in 1949. There have been many periods of division and China has changed shape often. Today's China is 3.4-times the size of Qin, but for 2,000 years, China has looked back to the First Emperor as a symbol of the ultimate ideal: unity.

Standardisation of coins, axles, colours and weights

The Qin Empire was held together by a series of measures that made Qin standards universal. Black was the colour of flags and uniforms. Every state abandoned its own coins for round copper ones with a square hole in the middle. Cartwheels were given a single gauge, so that they all ran in the same ruts. Weights and measures became uniform. Law and order was harsh but equal.

Standardisation of writing

China had had a script for 1,500 years, but it changed with the centuries and each state had its own variant. Under the First Emperor, all regional variations gave way to a single 'seal script'. This was perhaps his most significant reform, because all officials could understand his orders and each other, whatever their dialects. Today, China's script still binds the nation together. Mandarin speakers may not understand spoken Cantonese, but both understand the same written characters.

Roads

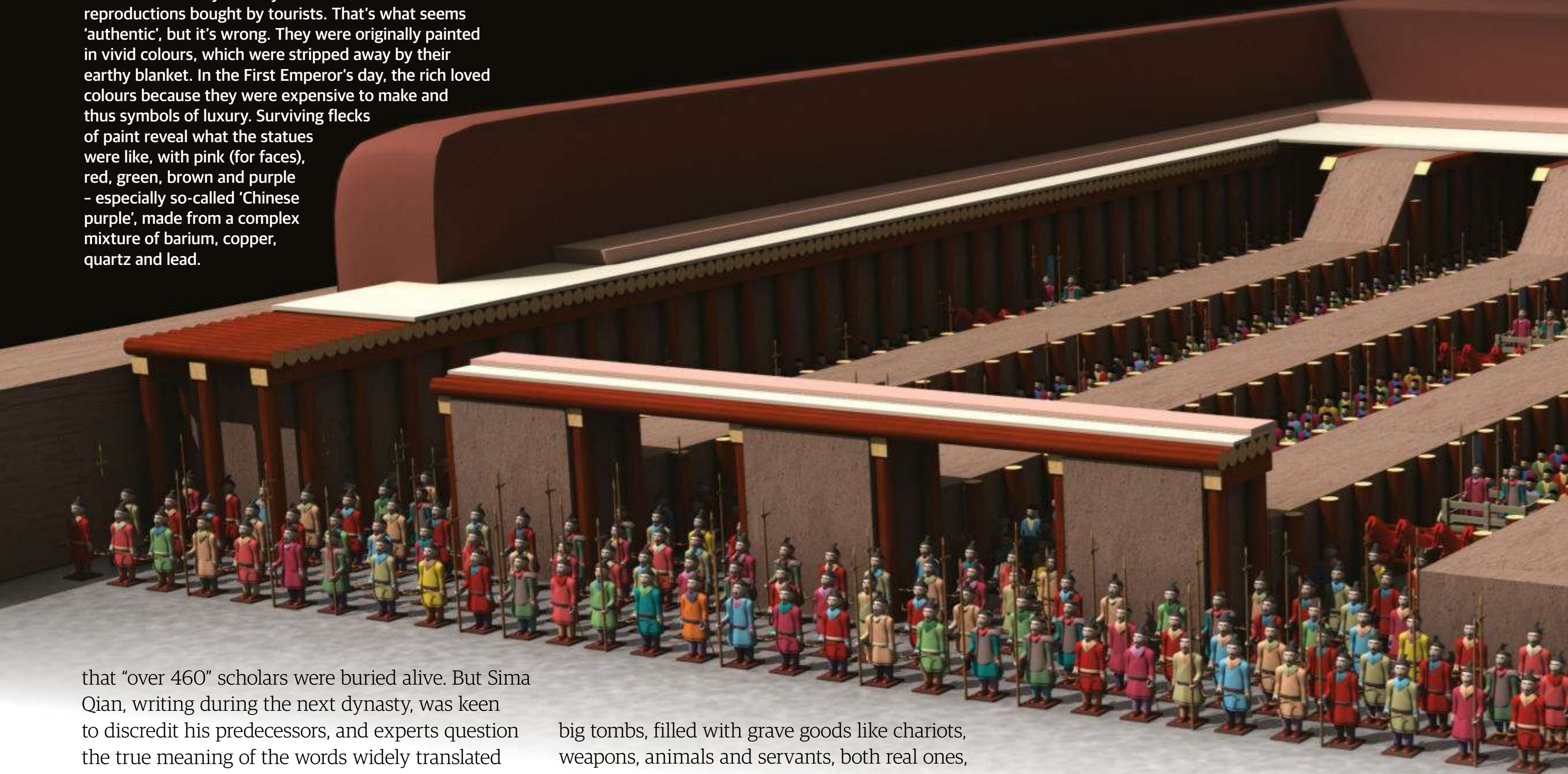
Fast travel was vital for messengers, troops and royal retinues, so the emperor put his labourers to work building roads – almost 7,000km in all. All the nation's 270 palaces were connected. In part, this was for security. He travelled between them in secret and executed anyone who revealed where he was. One of the roads ran 800km northward across the Ordos semi-desert so that troops and workers could get to the border – and the Great Wall – as quickly as possible.

Great Wall of China

This was nothing like today's Great Wall, which dates from 1,500 years later. At the time, there were many walls. After unification, there was only one enemy: the nomadic 'barbarians' of the northern grasslands. Fearsome mounted archers, they often galloped south on raids. The emperor's huge workforce joined up many small walls along the northern borders of Zhao and Yan, creating a single barrier stretching across northern China for 2,500km.

THE PAINTED WARRIORS

The warriors today are clay-coloured, as are the reproductions bought by tourists. That's what seems 'authentic', but it's wrong. They were originally painted in vivid colours, which were stripped away by their earthy blanket. In the First Emperor's day, the rich loved colours because they were expensive to make and thus symbols of luxury. Surviving flecks of paint reveal what the statues were like, with pink (for faces), red, green, brown and purple – especially so-called 'Chinese purple', made from a complex mixture of barium, copper, quartz and lead.



that "over 460" scholars were buried alive. But Sima Qian, writing during the next dynasty, was keen to discredit his predecessors, and experts question the true meaning of the words widely translated as "burned" and "buried". Anyway, countless Qin books survived. These record cruel punishments, including being torn apart by carriages and being boiled to death. But there are no records of the execution of scholars. It seems the emperor's new legal system actually prevented gross abuses of power.

Peace had one startling result: the king's vast army – millions of soldiers from all seven nations – was no longer needed. Something had to be done with them, or risk rebellion. So the soldiers were set to work on huge projects: over 6,000km of paved roads, half a dozen royal palaces, military bases, and – most famously – the first Great Wall.

One the First Emperor's grandest projects was his tomb. It was built near the ancient capital, Xian, at the foot of a sacred mountain, Mount Li. Records claim that 700,000 worked on it (although 40,000 is a probably a more accurate figure) and they spent a year just digging out a pit for the tomb itself. Later, after his death, the tomb would be covered with the hill that is still there today – 50 metres high, 350 metres per side; the size of the Great Pyramid, though unlike the pyramids, it is made of earth, not stone.

What was it all for? The answer is: to live forever in the spirit world. The emperor, like his whole society, was obsessed with life after death. He believed the next world mirrored this one, and that a dead person needed familiar objects in the grave to recreate life. The rich and powerful needed big tombs, filled with grave goods like chariots, weapons, animals and servants, both real ones, killed and buried with their lord, and models, for a life-like image could in some magical way become 'real' in the spirit world. Everything was designed to remake the emperor's life on Earth – government, banquets, entertainments, hunting, fighting.

The tomb itself was perhaps devoted to government. Sima Qian says it contains a model of the empire, with the rivers picked out in flowing mercury, the night sky portrayed in the ceiling, and all defended by crossbows ready to fire on intruders. It sounds unlikely, but in 1982 archaeologists probed the tomb with 560 drillings that revealed the outlines of a building and slight traces of mercury vapour. The truth will only be known if and when the tomb is opened.

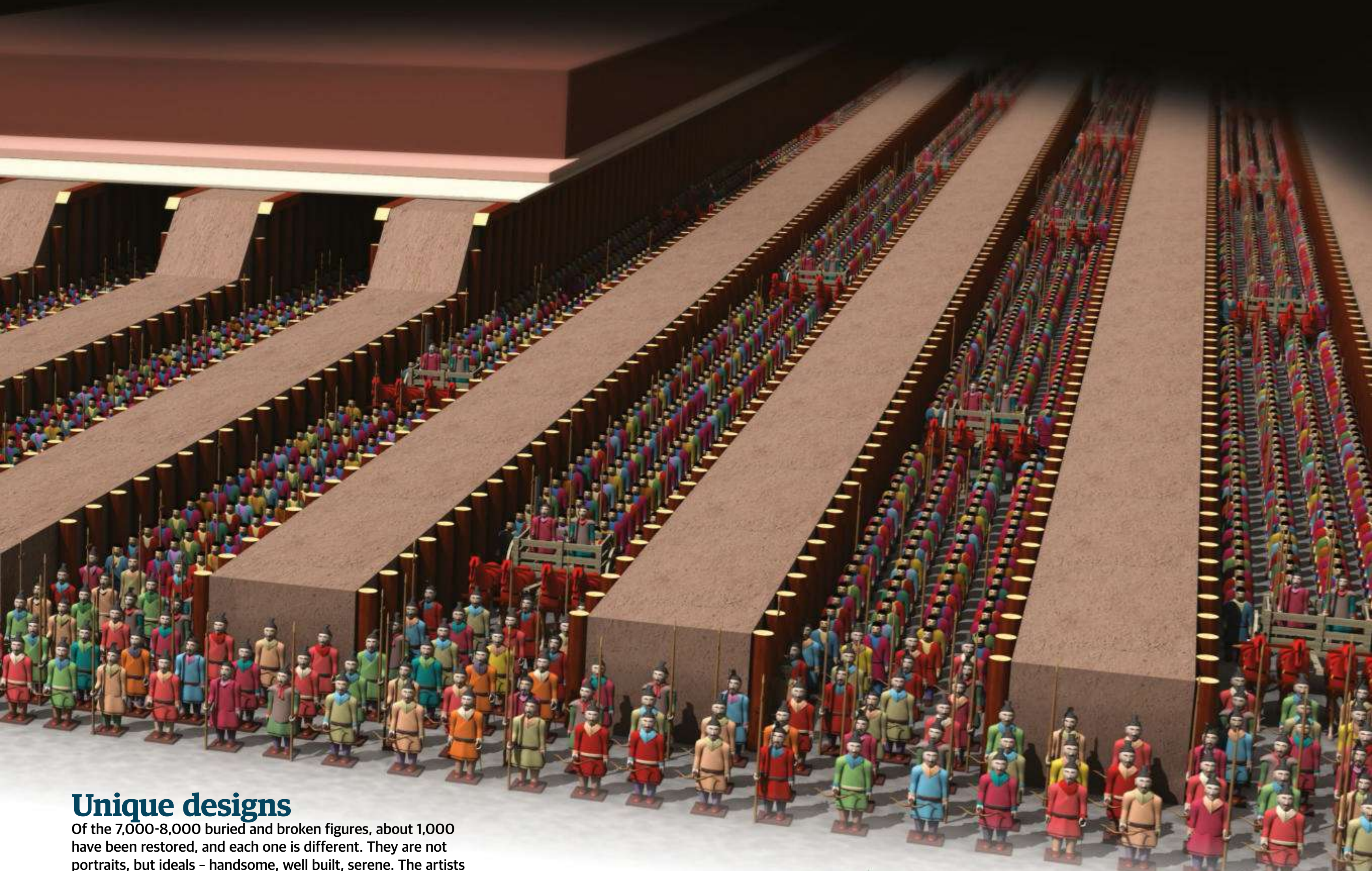
But the emperor would also need an army, and so he commissioned something that was totally original and unique. He had his artisans, hundreds of them, make thousands of full-size warriors out of clay, all painted in vivid colours and carrying real bronze weapons (which was why they had to be full-size).

> "The emperor, like his whole society, was obsessed with life after death"

Much of this work must have been done before his death, which was of some unspecified cause at the age of 50 in 210 BCE. However, for his burial, tens of thousands of workers rushed to finish the tomb and its many outlying graves. The terracotta warriors were placed in three pits 1.5km to the east of the tomb. Well armed with spears, lances, swords and crossbows, they were lined up on a tiled floor as if on a parade ground, ready to help their lord fight off any spirit armies coming to take over his empire. The pits, nine metres deep, were roofed with wooden beams, twice as thick as telegraph poles, weighing 500kg each, over 6,000 in all. The beams were covered with matting, on top of which workers piled three metres of earth.

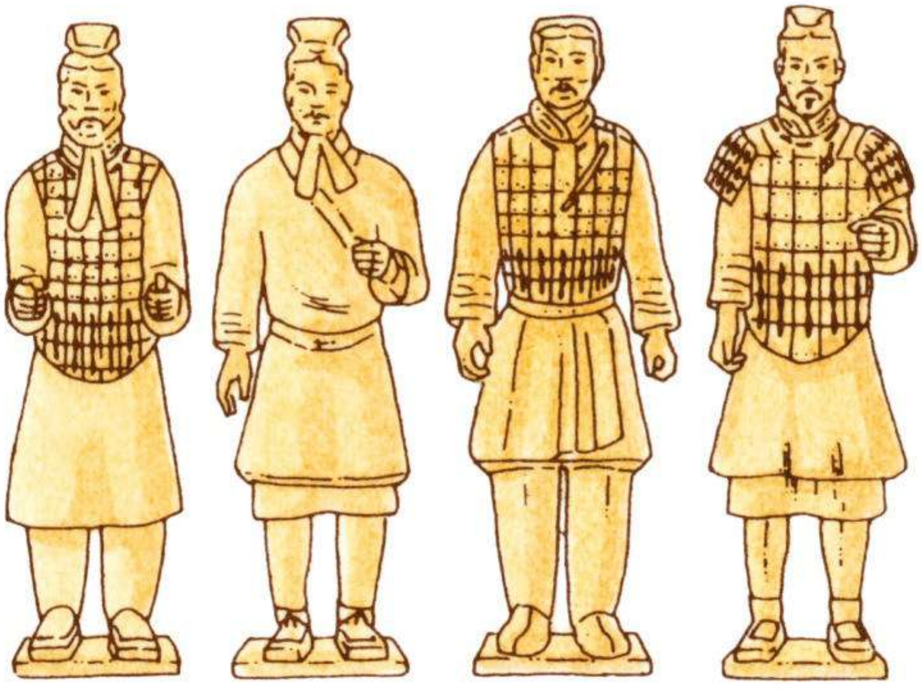
Then they vanished. There were no records. Sima Qian makes no mention of them. After a generation or two, they were forgotten, the memory of them erased by the chaos and civil war that destroyed the Qin Empire.

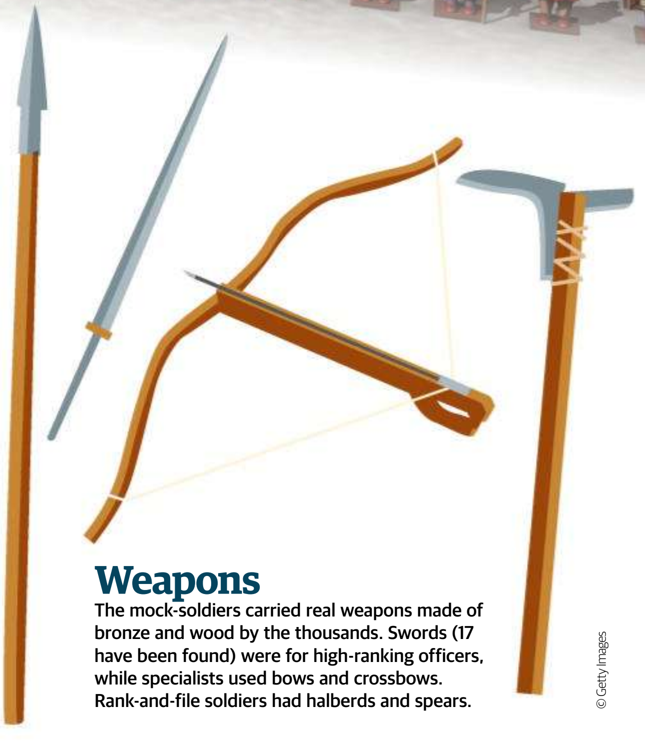
So when the warriors were found in 1974, they were a total surprise. And when archaeologists got to work there was another surprise: not a single soldier was found intact. All had been shattered. Today's display is the result of painstaking reconstruction. So far, 1,000 have been restored, though all their bright colours vanished into the earth that buried them. The rest are still buried, awaiting techniques that can ensure better preservation. No one knows exactly how many



Unique designs

Of the 7,000-8,000 buried and broken figures, about 1,000 have been restored, and each one is different. They are not portraits, but ideals – handsome, well built, serene. The artists just varied the details, like eyebrows, beards and moustaches.





Weapons

The mock-soldiers carried real weapons made of bronze and wood by the thousands. Swords (17 have been found) were for high-ranking officers, while specialists used bows and crossbows. Rank-and-file soldiers had halberds and spears.

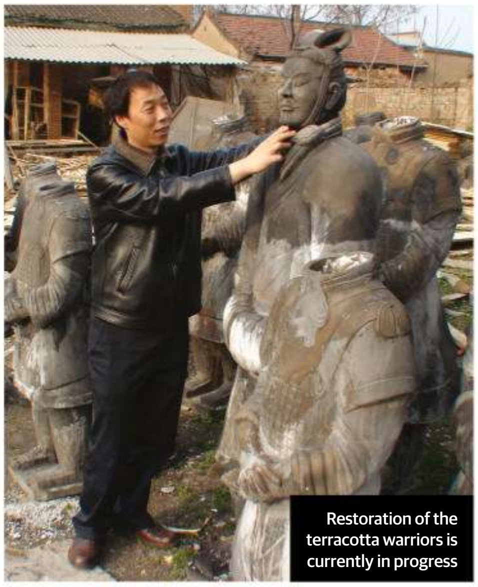
© Getty Images

THE ELIXIR OF LIFE

Some people taught that the body could be made incorruptible by death, and so become a xian, an immortal. For centuries, Daoists experimented with elixirs – mixtures including gold, mercury, arsenic and lead – undeterred by the often fatal results. The First Emperor believed in the elixir, and took seriously a charlatan named Xu Fu, who told him it could be found in islands off the east coast. Xu promised to find it, but did nothing. In 210 BCE, the emperor, when touring the east, found and questioned Xu, who claimed he had been prevented from sea travel by a large fish. The emperor, deranged by paranoia, believed him and fired arrows into the sea to kill the non-existent monster. Soon afterward, he died.

A depiction of what is believed to be buried under the mound – the transparent pyramid in the picture representing the earth on top of it

Many terracotta horses were also made for the emperor's tomb



Restoration of the terracotta warriors is currently in progress

there are: the 7,000-8,000 is an estimate, as is the number of 670 horses. But this is not enough for an army. The emperor's real army numbered in the tens of thousands. Perhaps there are more to be discovered. After all, there have been many other finds over the years, including horse skeletons, tombs of officials, other types of terracotta statues, bronze birds, and two astonishing half-sized chariots, complete with horses and drivers.

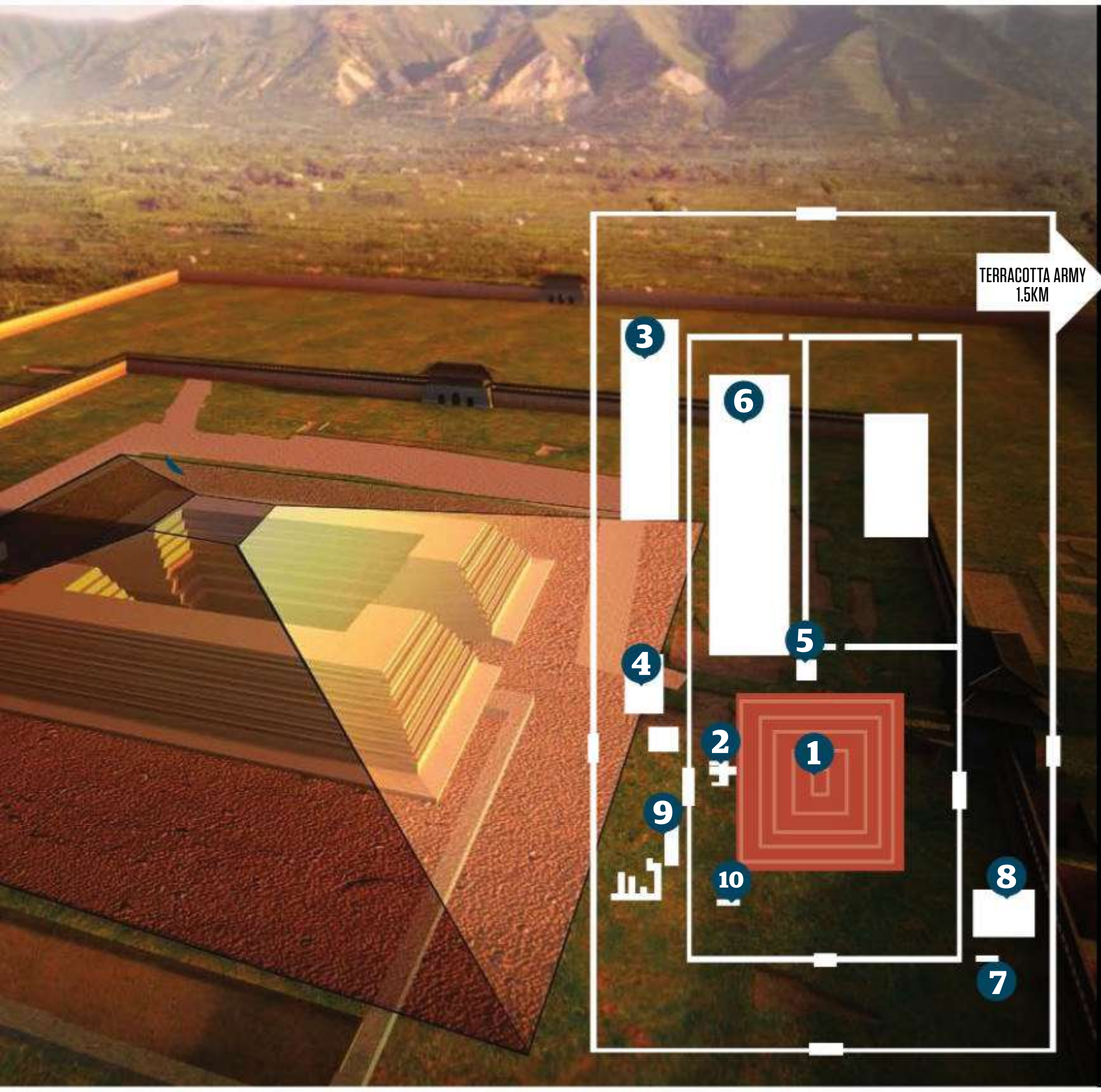
But the star turn is the army, now partly restored from jigsaw puzzles of bits and pieces. Not a single one in the main pit has been found complete. All were found curiously shattered – but how? Fire appears to have been somehow responsible, for the earth above them was baked solid. But how did the fire start, and how could it break every single statue?

To answer, we must become detectives. It must have had something to do with the rebels who rose against the Qin dynasty after the First Emperor's death in 210 BCE, beginning eight years of civil war before the Han Dynasty took over in 202 BCE.

In a film shown to tourists in the Terracotta Army museum, rebel soldiers break through doors and torch the place. But there were no doors, no mass break-in. There is no evidence of the roof being dug up. So there was no oxygen to sustain a fire. That's the mystery: a fire, but no means to keep it burning.

This might have happened: as the empire fell apart, a rebel army approached the tomb, with no army to stop them. Historian Ban Gu, writing 200 years later, says the Qin generals advised: "There are forced labourers at the Mount Li grave complex. Grant them amnesty and supply them with arms." This was done, which temporarily blocked the rebel army, and also stopped work on the First Emperor's tomb. This explains why there are three pits full of soldiers – but a fourth pit is completely empty, awaiting warriors who never arrived.

In Lintong, rebels knew about the Terracotta Army from the hastily recruited labourers. So in early 206 BCE, with the Qin palaces ablaze, rebels arrived at the tomb-site, eager for more booty. The vast tomb itself was too much of a challenge. But they knew of the buried army, knew also that it contained real weapons.



THE BURIAL SITE

1. The tomb
The burial mound is around 50 to 75 metres high. Soundings suggest that beneath it is a stepped half-pyramid up to 150 metres wide with two entrances. Inside, presumably, is the emperor's coffin.

2. Pit of the Bronze Chariots
Two half-size chariots were found in 1980. One (the so-called High Chariot) was open, the other (the 'Comfortable Chariot') was enclosed, for the emperor's spirit. Both were crushed, but are now restored.

3. Servants' quarters
The worship of the emperor needed a staff of hundreds. They lived here, with offices and washing facilities.

4. Banqueting room
It was probably used to provide meals for all the functionaries and to make the food offered every day to the emperor's spirit.

5. Resting hall
This 57-by-62-metre complex was above ground; the centre for the cult devoted to the emperor.

6. Side hall
In these above-ground buildings, family members would prepare themselves for the frequent rituals of mourning and worship.

7. Pit of the 'acrobats'
Twelve figures, dressed in skirts. Eleven of them are perhaps acrobats, and one is possibly a wrestler.

8. Stone armour pit
Discovered in 1998, this pit contains about 120 suits of limestone armour, all broken. Limestone does not make real armour – it's too heavy and too fragile. It was probably a symbolic defence against evil spirits.

9. Menagerie pits
Several pits that each contain the skeleton of a bird or animal. They possibly symbolise the First Emperor's hunting ground or zoo.

10. Pit of the officials
Discovered in 2000, it contained 20 horse skeletons and 12 terracotta figures. Long sleeves and writing tools make clear that they are officials.

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> "In the chaos, something cut the tomb break-in short"

There was no time to dig up the earth and beams. The best way in was to dig straight down. The evidence is in Pit No 2, a hole like a small mineshaft bypasses the roof and enters the pit. A metre or so wide – it's big enough for one person to enter and hand weapons up to the surface.

Imagine the first rebel soldier breaking through, seeing nothing, calling for a blazing torch. Its flickering light reveals the front lines of clay soldiers in their original painted finery, with pink faces and brightly coloured coats. In cavernous corridors, the soldiers range backward into darkness and – most importantly – they're all armed. For fighting men, it's a treasure-trove.

Others slither down the hole, holding more torches. The intruders begin to weave and shove their way through, grabbing weapons, passing them back to the tunnel. "There is no evidence of organised destruction," says the army's senior archaeologist, Yuan Zhongyi. "We found remains of warriors which seem to have fallen in a zig-zag pattern, which suggests they were pushed over as people forced their way through."

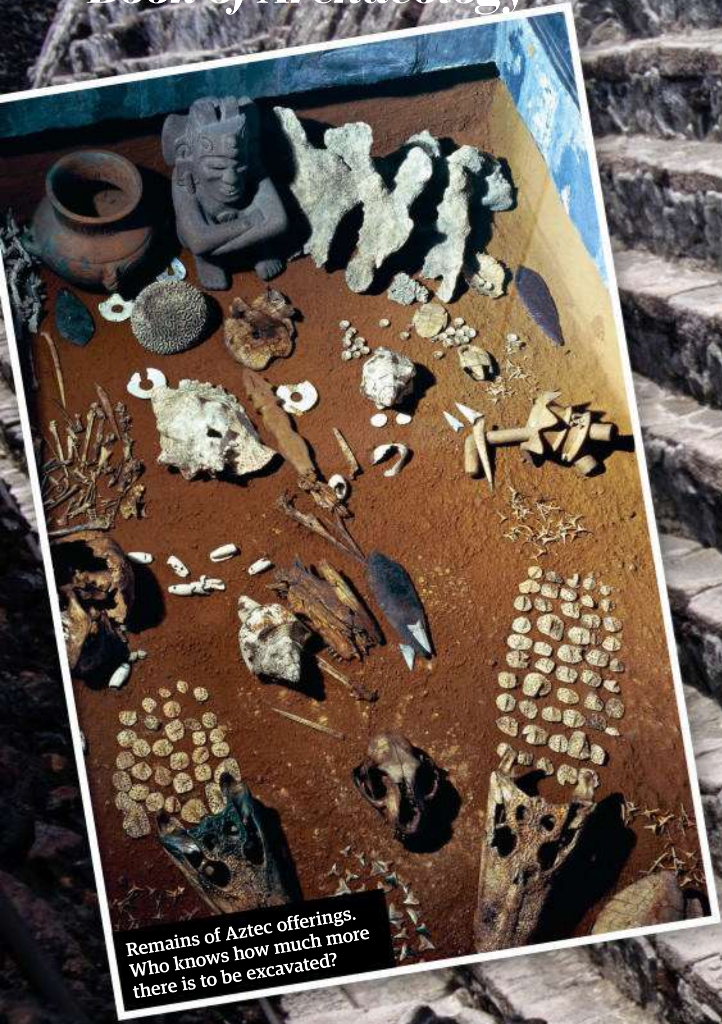
Then, in the chaos, something cut the break-in short. Fire. A torch smouldering beside a wooden pillar or one of the wooden chariots. For what happened next, we must rely on modern fire-protection engineers, like Joe Lally, an archaeologist with the US Department of the Interior's Bureau of Land Management in Albuquerque, New Mexico. In his computerised scenario, there is no exit for the smoke. The corridors fill with smoke in about four minutes, forcing the thieves to crawl to the exit, toppling more warriors and horses. They have only a few precious minutes to escape, and there is only room for one at a time up the exit shaft. They all made it because no charred skeletons were found with the smashed soldiers.

There is something odd about this fire. It takes a powerful hold, but it needs a flow of oxygen to keep it going. There's not enough coming in through the small entrance, so the flames go out.

Yet we know that fire completely destroyed the pit. How? This was a special sort of fire, like those that spread underground along seams of coal. Coal-seam fires are started by bush fires or lightning and there are thousands of them around the world, burning very slowly, for a very long time. There's one under the town of Centralia, Pennsylvania, that has been smouldering for half a century, and it may go on doing so for another 250 or so years.

Imagine the scene: in the main pit, the flames are dead, the pit dark again, smoke drifting along the corridors. But the fire has found a home in the ceiling, where the earth keeps a lid on it. Traces of oxygen seep in, just enough to keep the ceiling smouldering. Slowly, the slow fire eats away at the beams. At some point, charred timbers fall, breaking a piece off a warrior or two. A section of earth follows.

And so it goes, for years, the warriors crushed by the falling beams, the surface subsiding bit by bit, filled again by water-borne mud, until not a trace remains of what lies beneath – until the five Yang brothers dig up an earth-god.



Remains of Aztec offerings. Who knows how much more there is to be excavated?

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Rediscovering TENOCHTITLÁN

Dig up Mexico City's Aztec past with the archaeologists who have made stunning discoveries over the past few decades

Written by Scott Reeves

On 21 February 1978, workers laying electrical cables in Mexico City made the discovery of a lifetime. They were digging up the road in a place known throughout the city as the Island of the Dogs, so called because it was slightly higher than surrounding neighbourhoods and, when flood waters inundated the city, street dogs would congregate there. As the digger reached a depth of two metres, it scraped against a large stone. When the workers looked at the obstruction more closely, they saw it was covered in fine carvings.

Moving the stone took considerable effort - it weighed more than eight tonnes - but the archaeologists who retrieved it soon realised they had stumbled upon a very special find. The stone disc, three and a quarter metres in diameter and 30 centimetres thick, showed the Aztec goddess Coyolxauhqui after she had been killed by her brother, Huitzilopochtli, the god of sun and war. The image of the naked, dismembered and decapitated goddess must have originally been situated in the Templo Mayor, the Great Temple of Tenochtitlán, the exact location of which had been lost to the mists of time.

In 2017, a sacrificial wolf was found buried with gold ornaments and chest plates, sea shells, and even flint knives

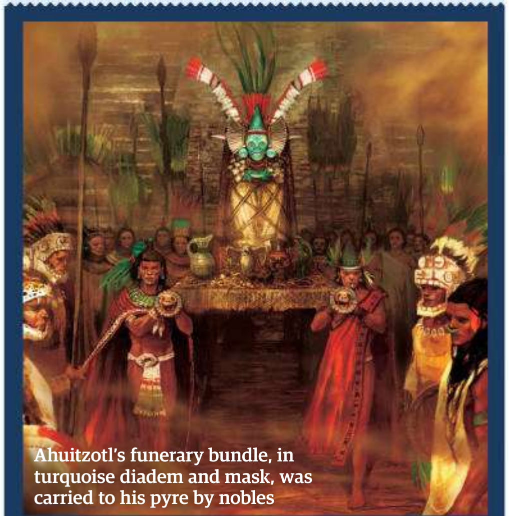
That the Templo Mayor was missing in action was not an unusual occurrence in Mexican archaeology. Unlike other great empires of history, such as those belonging to Egypt, Greece and Rome, the Aztec Empire was poorly served in terms of archaeology. Relatively few archaeological sites were known outside the capital city, mainly due to the indirect nature of Aztec control, which did not lead to large-scale material investment in the provinces. In Tenochtitlán itself, Aztec buildings were quickly destroyed when the Spanish conquistadors took over the city and built their new colonial base, Mexico City, on top.

It was known that the Templo Mayor was somewhere in the area that the stone disc of Coyolxauhqui had been found - a number of small-scale excavations in the first half of the 20th century had uncovered some buildings and artefacts of a ritual nature - but at that time there was little desire to dig up what had become an affluent residential district of Mexico City. However, the Coyolxauhqui disc captured public attention like no previous find had done, and the authorities finally decided to act. For the next four years, archaeologist Eduardo Matos Moctezuma was allowed to dismantle 13 buildings, themselves of historical interest with features dating from the Spanish colonial era, in order to access the Aztec remains. The initial findings were promising. The level of preservation was good, with more than 7,000 objects pulled from the soil. Many of these had an undoubtedly sacred function: animal skeletons, effigies and figurines of the gods, and decorated stone knives.

Historians already knew about the Templo Mayor – a dual temple atop a stone, square, step pyramid – from Spanish writings. Two stairways provided access to the two temples, one of which was dedicated to Tlaloc, the god of water and rain, and the other to Huitzilopochtli, the god of war and the sun. Usually only priests and sacrificial victims would be allowed up the stairs to the temples, but Emperor Moctezuma II had invited Hernán Cortés to climb the steps to better view the city before the relationship between the two leaders descended into the short conflict that would destroy the Aztec Empire. Spanish chroniclers, though in awe of the magnificence of the Templo Mayor, were shocked by bloodstains on the floor and the acrid stench of hearts burning on sacred braziers.

What the Spanish did not know or write about, however, was the long history of the Templo Mayor. The archaeological excavations of Eduardo Matos Moctezuma (a name that suggests he may be descended from the imperial line himself) revealed that the grand temple that Cortés climbed was actually the seventh incarnation on the site. Underneath it were six prior versions, each of which was altered, improved and built upon by successive emperors.

The modern-day archaeologists uncovered evidence from every version of the Templo Mayor except the first. That initial wooden construction, begun soon after Tenochtitlán's founding in 1325, has sunk into the water table and any remnants have likely rotted away. However, the successor temples can be plotted through a jigsaw of leftover stone buildings and sculptures. Among the prize finds was a téchcatl, the stone upon which a sacrificial victim was laid in order to remove their heart. It dated to the time of the second temple, constructed over 50 years in the reigns of Acamapichtli, Huitzilihuitl and Chimalpopoca. The Coyolxauhqui disc that stimulated the excavations to begin dated to the fourth temple, while finds from the sixth temple, built during the reign of Ahuizotl, included carvings commemorating the opening of the temple and gave the exact date of the ceremony – 19 December 1487.



Ahuitzotl's funerary bundle, in turquoise diadem and mask, was carried to his pyre by nobles

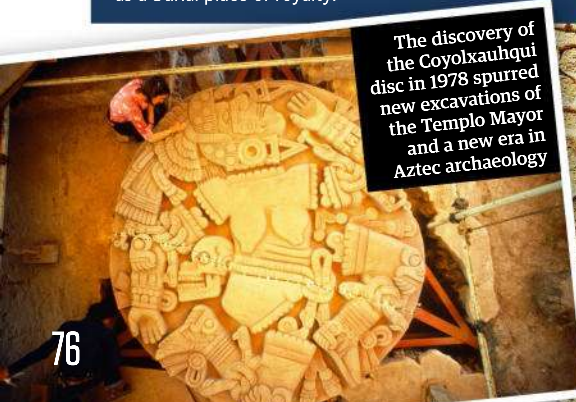
THE EMPEROR AND THE ASHES

Will the mortal remains of Emperor Ahuitzotl ever be found?

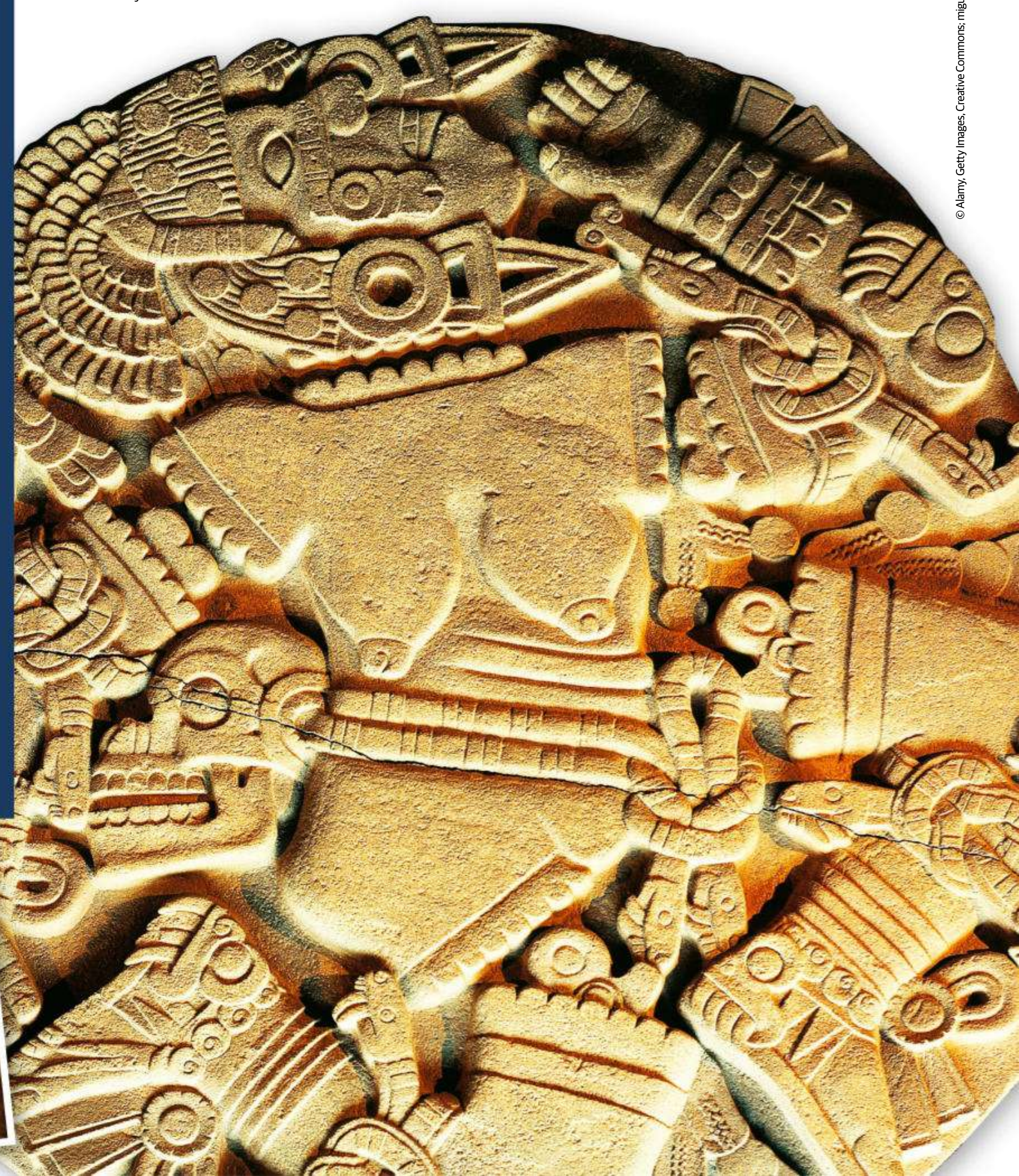
British archaeologists were stunned when they discovered the body of King Richard III in 2012. Six years earlier, Mexican archaeologists thought they may have had their own king-in-the-car-park moment. Aztec emperors were publicly cremated on a platform called a cuauhxicalco, then placed in a ceramic urn and buried. Surrounding the area were trees decorated with colourful paper. Archaeologists think they have uncovered the cuauhxicalco in the form of a 12-metre circular platform decorated with stone serpent heads. Nearby, a withered trunk of an oak tree that grew in a large flowerpot was also found.

In 2006, archaeologists working in the Templo Mayor found a stone inscribed with the Aztec date 10 Rabbit, corresponding to 1502, along with burial objects that suggested the interment belonged to an important person. Could this be the spot where Ahuitzotl, the eighth Aztec Emperor who more than doubled the Empire's lands and died in 1502, was buried? Nothing further was found, leading some to reluctantly conclude that Ahuitzotl's urn was actually dug up in 1900 by early Mexican archaeologist Leopoldo Batres, who was unaware that he was excavating the Templo Mayor and that he may have exhumed one of the greatest Aztec leaders.

However, the area that Batres excavated had long been thought of as a place of ill omens by the few modern Mexicans who'd chosen to build their houses there. Was this a hangover from the site's eerie past as a burial place of royalty?



The discovery of the Coyolxauhqui disc in 1978 spurred new excavations of the Templo Mayor and a new era in Aztec archaeology



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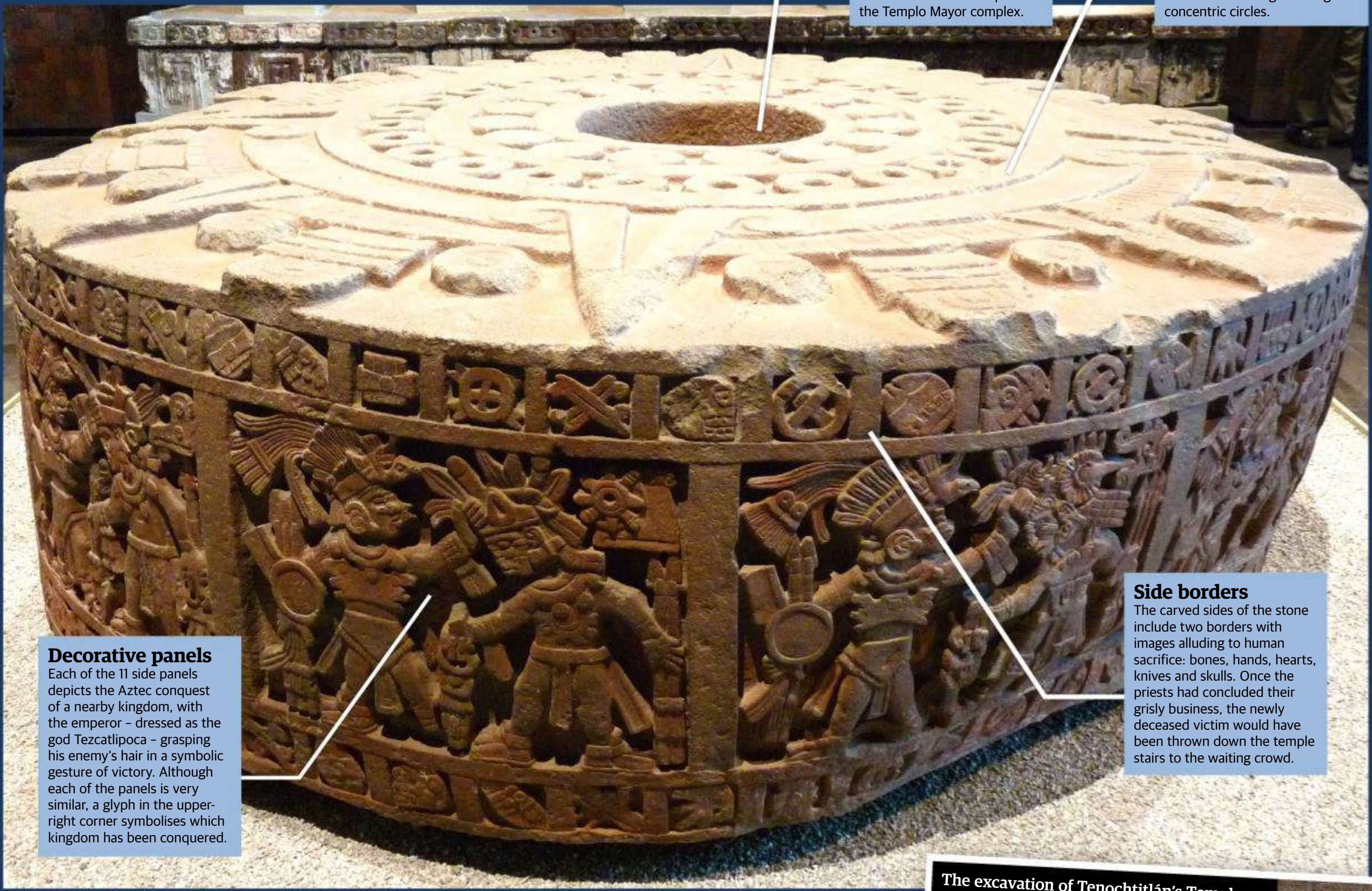
STONE OF MOCTEZUMA

Discovered during excavation of the Templo Mayor in July 1988, this giant stone was carved during the reign of Moctezuma I, the fifth king of Tenochtitlán



Basin
The circular basin in the centre contains a carving of the sun god Tonatiuh, out of whose mouth stuck a tongue in the shape of a knife (now broken off). Sacrificial victims would have been tied to the protruding tongue, suggesting that it was originally located outside one of the temples of the Templo Mayor complex.

Carved design
The upper face of the stone, just over 3.6 metres in diameter, has a circular design reminiscent of the sun. Carved arrows point to the outer edge, alongside pictures of cuauhxicalli, the stone receptacles used to house human hearts after sacrifice. The inner stone face has small circles arranged in larger concentric circles.

Decorative panels
Each of the 11 side panels depicts the Aztec conquest of a nearby kingdom, with the emperor – dressed as the god Tezcatlipoca – grasping his enemy's hair in a symbolic gesture of victory. Although each of the panels is very similar, a glyph in the upper-right corner symbolises which kingdom has been conquered.

Side borders
The carved sides of the stone include two borders with images alluding to human sacrifice: bones, hands, hearts, knives and skulls. Once the priests had concluded their grisly business, the newly deceased victim would have been thrown down the temple stairs to the waiting crowd.

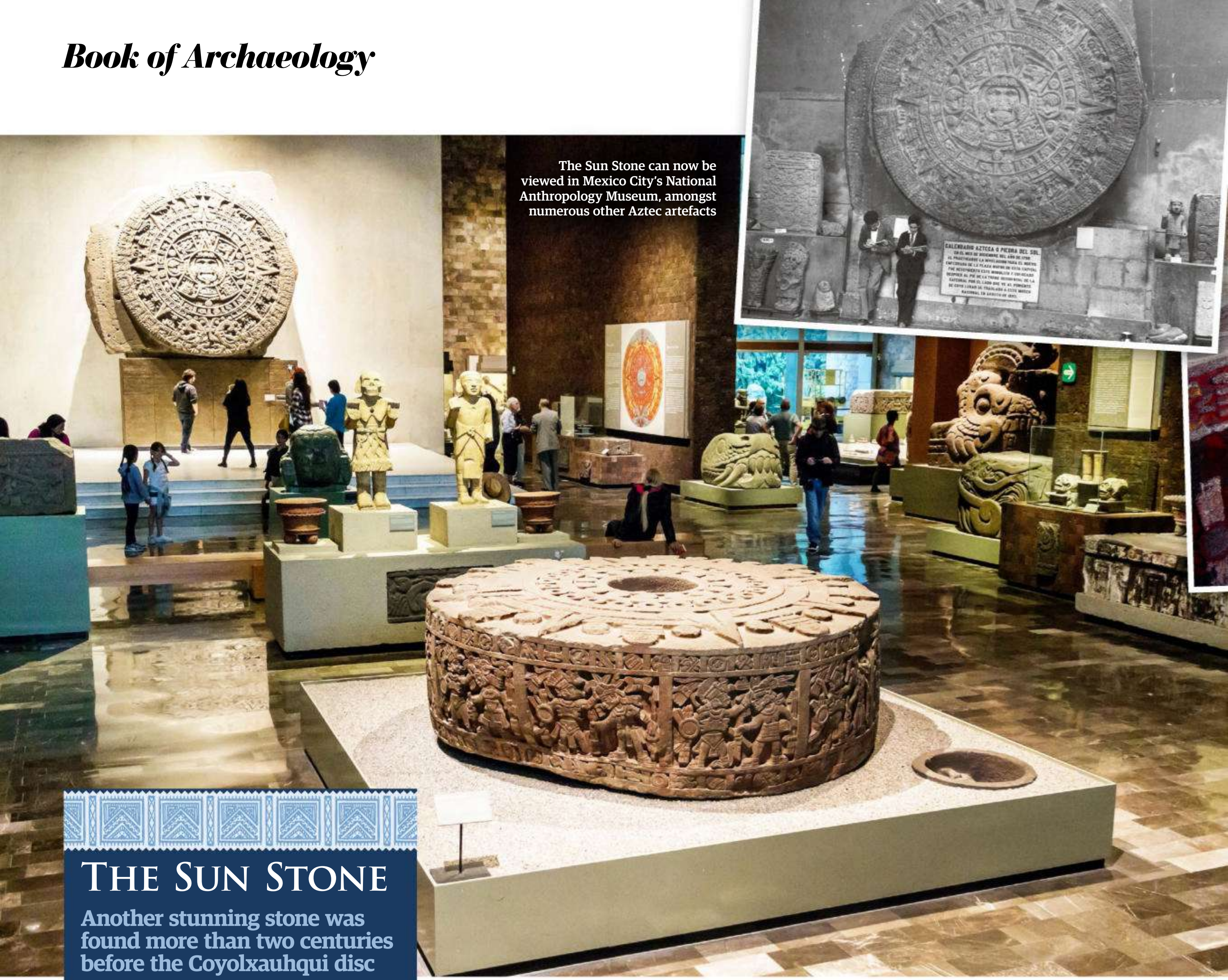
Although the excavation of the Templo Mayor that directly resulted from the Coyolxauhqui disc took place between 1978 and 1982, further investigations continue. In 2009, archaeologists began to dig up Plaza Manuel Gamio (fittingly named after an early-20th-century Mexican archaeologist who excavated the Aztec city of Teotihuacán) adjoining the Metropolitan Cathedral. Here they discovered grisly artefacts used in the business of sacrifice.

A cache of 47 clay incense pots known as sahumadores were meticulously positioned and showed signs of regular use. Aztec priests were thought to pack the pots with sweet-smelling incense to disguise the rancid smell of death that pervaded the temples during the sacrificial rites. Nearby, they also uncovered a statuette of a woman made from one such incense – copal, an aromatic tree resin – and half a millennia later the statuette still gives off a sweet, eucalyptus-like aroma.

If the Spanish tales of human sacrifice were ever in doubt, they were laid to rest when the archaeologists investigating Plaza Manuel Gamio uncovered a number of human burials. More than 650 skulls were uncovered, most with holes

> "Aztec priests packed pots with sweet-smelling incense to disguise the rancid smell of death during sacrificial rites"

The excavation of Tenochtitlán's Temple of Ehecatl-Quetzalcoatl and ball court was squeezed in between city-centre buildings



The Sun Stone can now be viewed in Mexico City's National Anthropology Museum, amongst numerous other Aztec artefacts

above their ears that were bored after death, with trace organic remnants suggesting that they had been decorated with cactus thorns, cornflowers and cotton blossoms. These skulls were probably displayed in a tzompantli, or skull banner – a large rack, 35 metres long and five metres high, which could hold thousands of skulls on wooden poles through the man-made holes. In front of the skull rack were two large stone pillars, six metres in diameter, into which skulls that had been removed from the rack were plastered. The gruesome sight was first described by conquistador Andres de Tapia and was originally thought by historians to have been built from the heads of defeated warriors who fought the Aztecs.

However, historians have been forced to reconsider their theories after discovering the results of laboratory analysis. Only three-quarters of the skulls examined belonged to men; a puzzling 20% were women, while 5% belonged to children. Isotopic analysis suggests that, whilst they were born away from Tenochtitlán – most in southern Mexico – many spent a considerable amount of time in the capital city before they died. Were these actually the skulls of captured warriors, as the Spanish thought? Or could they have been slaves, or unfortunate migrants chosen to be sacrificial victims?

Two particular child burials in the grounds of the Templo Mayor have also focused the archaeologists' thoughts on the reasons behind sacrificial rites. The first, discovered in 2005, was the burial of a five-year-old boy dated to around 1450. Skeletal evidence showed that his heart had been removed

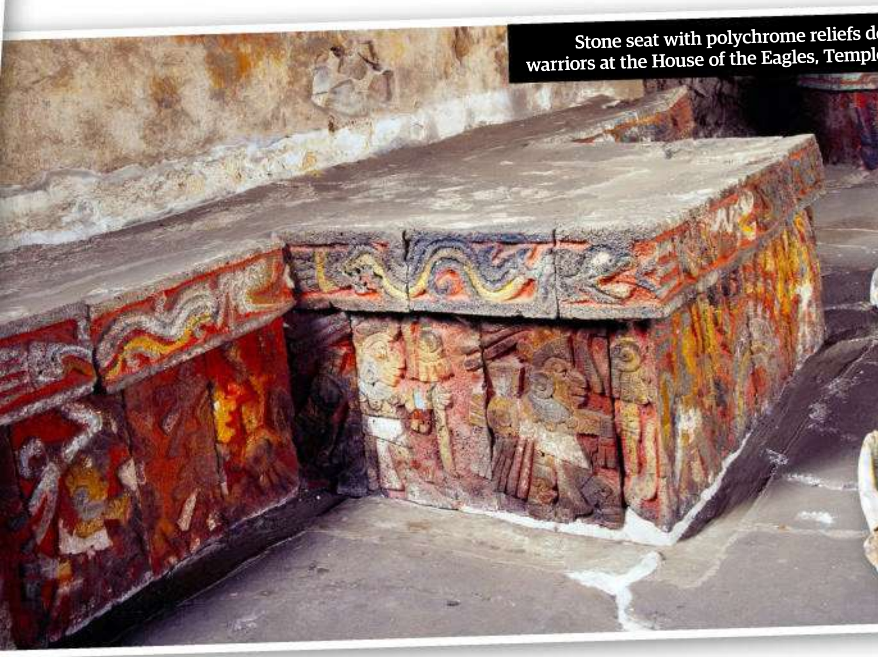
> "More than 650 skulls were uncovered, most with holes bored above their ears where they'd been decorated with cornflowers"

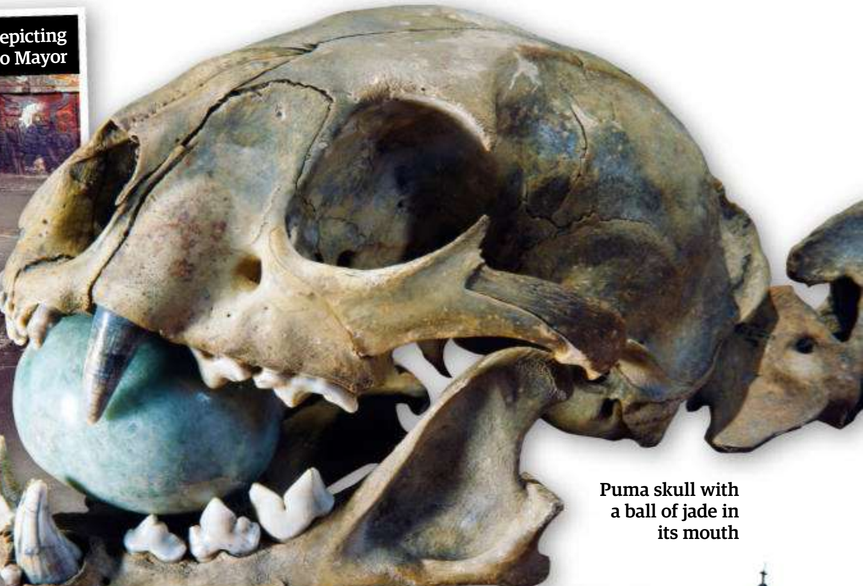
THE SUN STONE

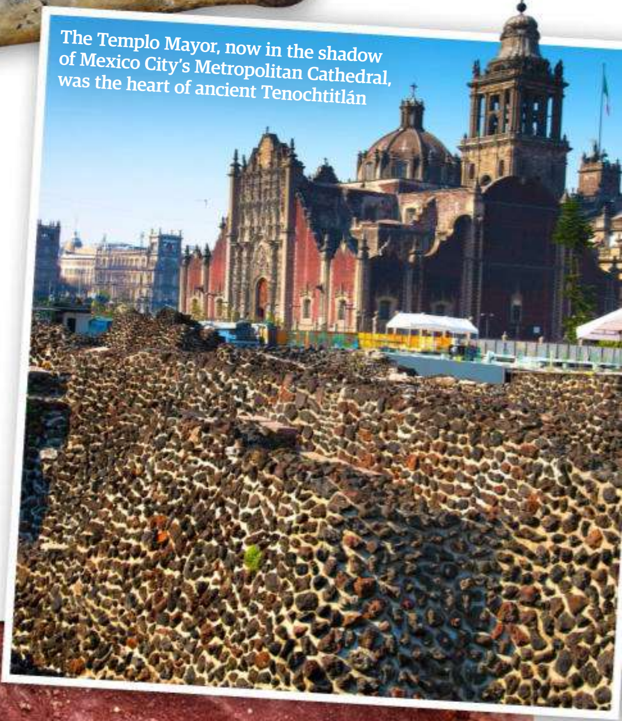
Another stunning stone was found more than two centuries before the Coyolxauhqui disc

Perhaps the first ever Aztec archaeological find occurred on 17 December 1790, when a 21-tonne stone block was found buried under the Zócalo, Mexico City's main square, but its significance was initially overlooked by Mexico's early archaeologists. More than three and a half metres across and almost one metre thick, the stone depicts Tonatiuh, the sun god, surrounded by a series of ornate circular carvings. The exact function of the Sun Stone has been deliberated ever since it was found. Was it a calendar, as 19th-century antiquarians believed? Was it a ritual altar, as most modern archaeologists think? Or was it a piece of political propaganda, designed to show Tenochtitlán as the centre of the world?

The Sun Stone survived the Spanish conquest for a few decades until Archbishop Alonso de Montúfar ordered it buried in an attempt to purge the new city of its pagan past. It was rediscovered more than two centuries later, when a new plaza was cleared, and hung on the outside of the Metropolitan Cathedral – quite ironic considering it was a churchman who originally ordered its burial. However, the historians and early archaeologists who studied the Sun Stone did not realise that an object of such importance would originally have been housed in the Templo Mayor. Not for a further 200 years would the location of the grand Aztec temple be rediscovered.


Stone seat with polychrome reliefs depicting warriors at the House of the Eagles, Templo Mayor


Puma skull with a ball of jade in its mouth


The Templo Mayor, now in the shadow of Mexico City's Metropolitan Cathedral, was the heart of ancient Tenochtitlán

and he was interred with grave goods including jewellery and the wings of a forest hawk. The second burial, uncovered in 2017, bore striking similarities – the boy, approximately nine years old, was carefully buried in a tomb with a ring-shaped wooden breastplate, a mask, jewellery and the wings of a forest hawk. This child died sometime around 1490.

The hawk wings were a symbolic offering that linked both burials to the god Huitzilopochtli, who was often depicted as a feathered figure. The careful inhumation of their whole bodies, unlike the dismemberment of most sacrificial victims, suggested that these boys had a specific and unusual function. Were they sacrificed to mark the closure or opening of a particular phase of the Templo Mayor, or were they killed to mark a different auspicious event?

The writings of the Spanish conquerors inevitably focused on the macabre deeds that took place in the Aztec temples, but the ritual complex in the heart of the city contained far more than just the Templo Mayor itself. One structure that vied with the great temple for sheer size was the Calmecac, a school for the Aztec elite to the side of the Templo Mayor. It was discovered by chance when workers demolished a building damaged by the devastating earthquake that struck Mexico City in 1985.

Excavation of the Calmecac revealed eight-foot high snail-spiral ornaments associated with the rain god Tlaloc that once stood on the roof the building and would have been viewable across the city. Spanish drawings had described small, decorative ornaments like these, but the conquistadors probably saw (and destroyed) a later version of the sculptures – the archaeologists found the bigger sculptures buried underneath a floor. At the other end of the scale, small artefacts give a glimpse of everyday life in the school: ceramic plates, cutlery and knives. On the wide staircases, the footprints of the priests-in-training who once ate from the plates are preserved in the stucco plaster.

Across the road from the Calmecac are more buildings and structures excavated by archaeologists in recent years. One dig has uncovered a nine-metre section of a ball court, used by Aztecs to play a sport that some uninspired historians have named 'the Mesoamerican ball game'. Although the rules of the game are not known, it seems likely that teams battled within the stone walls of the court to prevent a rubber ball from bouncing, possibly

> An earthquake in 2018 revealed the remains of a small temple inside Teopanzolco pyramid, just outside Mexico City

Recent excavations in Tenochtitlán are shedding new light on human sacrifice in the Aztec capital

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Mask with earrings from Teotihuacán, Mexico. Aztec civilisation, 14th-16th century

Models of gods from household shrines

using their hips as the main method to strike the ball. Spanish descriptions suggest that points could be scored if the ball hit the opposite team's end wall, while an automatic victory was earned if a team managed to put a ball through a stone ring. The Tenochtitlán ball court supports what has already been found in other ball courts across Central America. However, this particular court added to the modern understanding of the game when archaeologists uncovered a pile of 32 severed male neck vertebrae by a stairway just off the court. It showed that, even in the realm of leisure, human sacrifice seems to have played a role. These victims were likely sacrificed, perhaps decapitated, as part of the rituals and traditions that surrounded the mysterious game.

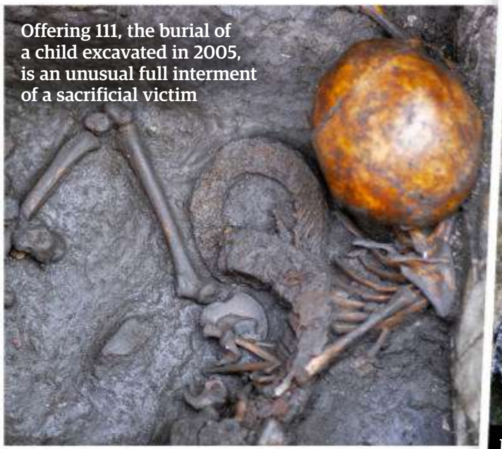
> Though it's thought around 500 Aztec codices (pictoral books) were made, only about 20 have survived

Only a small section of Tenochtitlán's ball court could be excavated, a problem typical of that faced by archaeologists digging in modern Mexico City. The entire footprint of ancient Tenochtitlán has been the site of centuries of subsequent building, demolition and rebuilding. Mexico City is the most populous metropolitan area in the Western Hemisphere, with nearly nine million people in the city itself and more than double that in the wider metropolitan area. The heart of Tenochtitlán is also the historic heart of the successor city, with colonial and revolutionary history vying for space with that of the Aztecs.

The Metropolitan Cathedral, seat of the Catholic Archdiocese of Mexico and initially constructed with stone robbed from the Templo Mayor, is never going to be pulled down so archaeologists can investigate what is underneath it. However, they have been able to dig trenches in parts of the adjoining Plaza Manuel Gamio and Plaza de Constitución, or Zócalo. Whenever a nearby building is redeveloped or rebuilt, archaeologists can access the foundations to ensure that nothing escapes their careful gaze.

The excavation that uncovered the ball court close to the Templo Mayor is one such example. When a 1950s hotel was pulled down to be redeveloped, archaeologists were given the chance to take a peek at a narrow corridor of land that they had not seen before. Alongside the ball court, the excavation exposed part of the 36-metre Temple of Ehecatl-Quetzalcoatl, god of wind and wisdom. It was revealed to be a distinctive, round shape; matching the description of Spanish priest Bernardino de Sahagún, and the outer wall corresponds exactly to the modern street plan above. However, the Spanish documents were shown to be incorrect in one important regard – they had the Temple of Ehecatl-Quetzalcoatl located 25 metres to the north.

Archaeological excavation of Aztec remains in Mexico City has not been confined to the Templo Mayor complex. A couple of miles to the north, a second Temple of Ehecatl-Quetzalcoatl has been unearthed in the Tlatelolco neighbourhood. Once a second city-state set up by dissidents 13 years after the foundation of Tenochtitlán, Tlatelolco grew alongside her bigger neighbour and eventually merged under Tenochtitlán control in 1473.

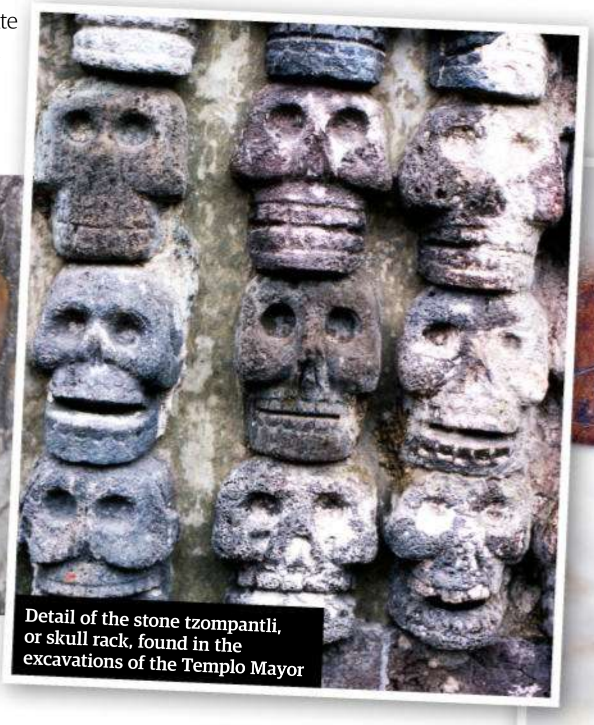


Offering 111, the burial of a child excavated in 2005, is an unusual full interment of a sacrificial victim

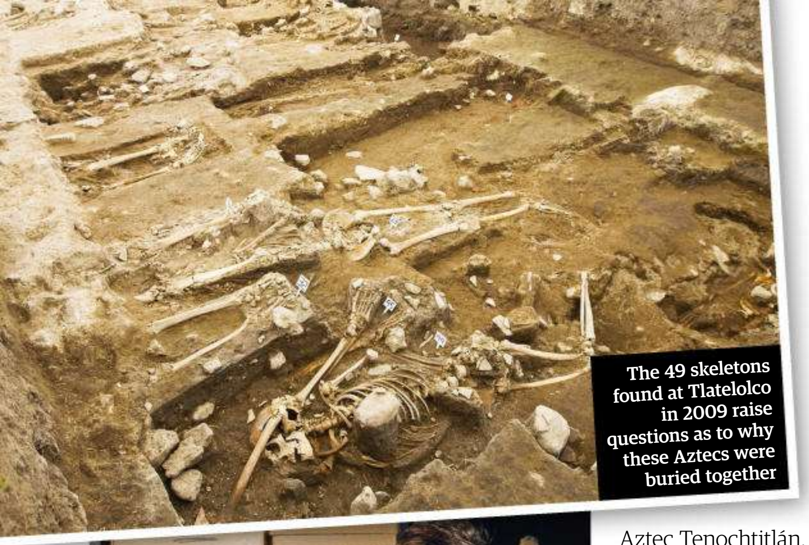
By then, Tlatelolco's residents had built their own Temple of Ehecatl-Quetzalcoatl with a similar circular floorplan to the nearby Tenochtitlán temple. The unusual shape was built to resemble a coiled snake, since the god took the form of a feathered serpent, with priests entering though a doorway made to look like the snake's fanged mouth. The archaeologists were also able to uncover the 11-metre-wide temple platform with white stucco plaster and offerings of bird bones, obsidian, cactus spines and ceramic figurines of monkeys and duck bills.

The temple was uncovered after a supermarket was demolished in 2014 in advance of a larger shopping mall being constructed. However, Tlatelolco had long been known as an important archaeological resource before the Temple of Ehecatl-Quetzalcoatl was found. The Plaza de las Tres Culturas – so-called because Aztec, colonial and Mexican buildings stand side by side – allows visitors to admire more than 60 Aztec structures, including altars, platforms and temples.

Yet archaeologists still have plenty left to do. Excavations at the base of the Spanish colonial Church of Santiago in 2002 discovered that it had been erected over Aztec foundations, just as Tenochtitlán's Templo Mayor was buried underneath the Metropolitan Cathedral. However, the ruins underneath the church were not



Detail of the stone tzompantli, or skull rack, found in the excavations of the Templo Mayor



The 49 skeletons found at Tlatelolco in 2009 raise questions as to why these Aztecs were buried together

Peeling back the layers of history is a slow process that requires a careful eye and hand

a place of Aztec worship – it was a simple, raised box structure. Two metres deep and eight metres across, the stone basin was a caja de agua, or water box. Water was fed into the basin via aqueducts from Chapultepec Hill, some four miles away. Although Tenochtitlán and Tlatelolco were surrounded by Lake Texcoco, the lake water was not suitable for consumption, so the water box provided a reservoir of drinking water from which residents could fill pots and take it away.

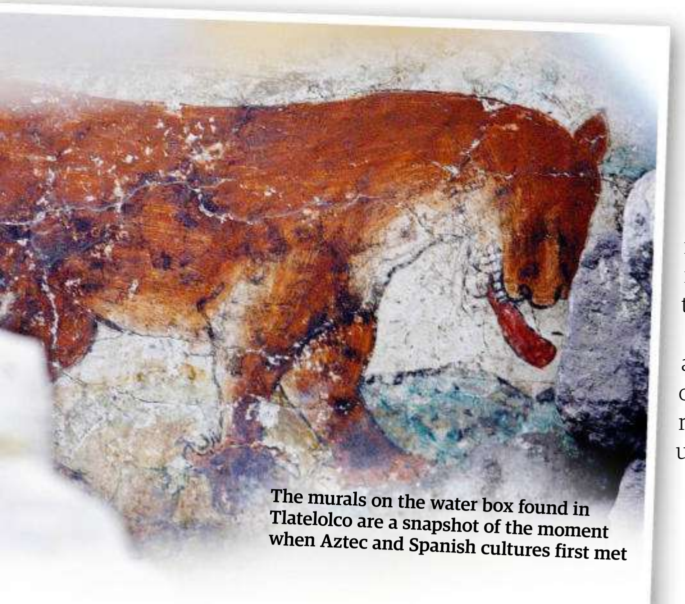
Given its importance to the inhabitants of the city, the water box was decorated with brightly coloured murals, the faded remnants of which the archaeologists have been able to record and preserve. The fusion of Aztec and Spanish styles is a snapshot of Central American history. Among the depictions are canoes, fishermen, ducks, reeds, water lilies, herons and jaguars. In one particular image, a coiled snake tries to eat a frog. Snakes and frogs were regarded as important animals in the Aztec belief system, but both animals were drawn in a naturalistic manner more common in European art. Essentially, the water box murals capture the moment when the Aztec and Spanish cultures first came into contact with each other, during the precious little time between the arrival of Cortés and the end of Aztec Tenochtitlán.

The water box has been dated to the reign of the final emperor, Cuauhtémoc, and may represent the final act of Aztec civil engineering before the Empire's collapse. Cuauhtémoc took control of Tenochtitlán in 1520 after the 80-day reign of Cuitláhuac, whose short rule may have come to an end after contracting smallpox from the Spanish newcomers. Recognising that defending the heart of Tenochtitlán was impossible, Cuauhtémoc fled to Tlatelolco and put up a brief fight before being captured when attempting to flee once again. Cuauhtémoc was brought before Hernán Cortés and allowed to remain on the throne as a puppet ruler – after he was tortured in the hope that he might reveal hidden stashes of Aztec gold! Four years later, Cuauhtémoc was executed after Cortés suspected him of plotting an assassination attempt.

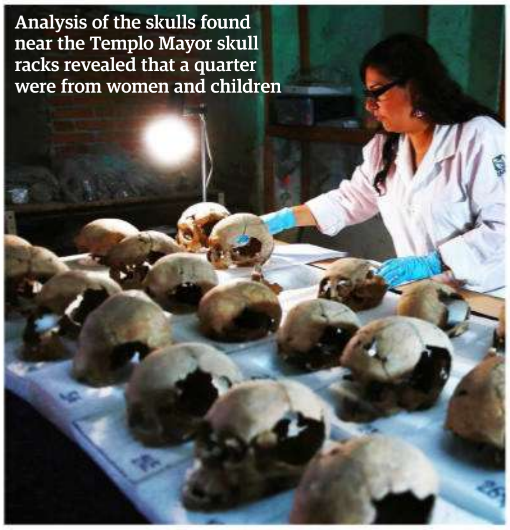
The final emperor's fate at the hands of the Spanish does not appear to be unusual. In 2009, archaeologists searching for a palace complex in Tlatelolco were surprised when they uncovered 49 skeletons in a mass burial. Most of the skeletons – 45 in total – belonged to young males of fighting age. Of the others, two were children, one was a teenager and one was an older male wearing a ring that might denote he was of higher status. Was this a war grave, filled with those who had fought for Cuauhtémoc against the Spanish invaders? That seemed unlikely since several of the skeletons had evidence of wounds which had healed. They were also carefully buried, laid out in neat lines on their backs, arms crossed and wrapped in maguey leaves.

The archaeologists' current theory is that these unfortunate Aztecs were prisoners of war who were captured in the battles around Tlatelolco and used as a labour force to deconstruct the Aztec temples and build the colonial city that replaced them. The mass burial was likely ordered by the Spanish overlords but carried out by the locals since the graves included typically Aztec burial goods like copper necklaces and bone buttons. Perhaps, like Cuitláhuac, the 49 mysterious dead fell victim to European diseases to which they had no resistance; or perhaps they suffered a similar fate to Cuauhtémoc, and were executed once they were no longer useful.

The ongoing excavations in Mexico City attempt to answer these and the many other questions that remain, continuing the recent golden age of Aztec archaeology and uncovering more of the capital city's past.



The murals on the water box found in Tlatelolco are a snapshot of the moment when Aztec and Spanish cultures first met



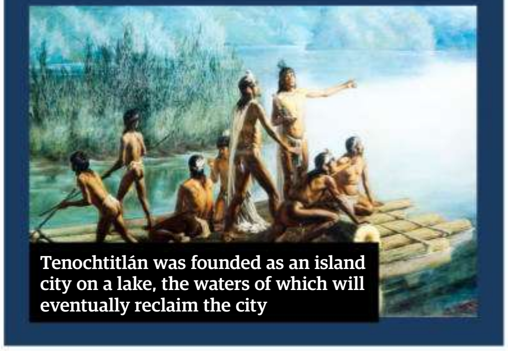
Analysis of the skulls found near the Templo Mayor skull racks revealed that a quarter were from women and children

The Aztec Atlantis

The watery problems encountered in the excavation of an island city

The archaeologists investigating the Aztec capital must not only peel away the layers of history, they must also battle Tenochtitlán's unusual geography. The city was built on a group of marshy islands in Lake Texcoco, with land reclaimed from the water using layers of tree trunks and soil – an ancient technique similar to that employed at the same time by civic engineers halfway around the world, in Venice. Archaeologists have also found traces of the canals that criss-crossed the Aztec city, as well as a pier that jutted into the lake.

However, water gradually seeped into the foundations. For the past 500 years, the ruins of Tenochtitlán have been sinking into the waterlogged soil at a rate of a metre per year. Archaeologists must constantly pump water from their trenches and scrape away wet soil that sticks to their trowels like glue. The only place that does not suffer from the ravages of the lake is the Templo Mayor, which was built on a sturdy island, and is sinking at a far slower rate. When Hernán Cortés visited Tenochtitlán as a guest of Moctezuma II in November 1519, the Templo Mayor rose 150 feet above the city. If the current rate of sinking around it continues, it will eventually stand that high above the city once again.



Tenochtitlán was founded as an island city on a lake, the waters of which will eventually reclaim the city

© Alamy, Getty Images, Creative Commons; miguelão. El Comandante

Shining a Light on the DARK AGES

The 1939 excavation at Sutton Hoo revealed the elaborate burial of a once mighty king, changing perceptions that Anglo-Saxon England was void of art and culture

Written by Dr Joanna Elphick

The River Deben weaves its way across Suffolk, a beautiful watercourse, home to dragonflies and kingfishers, and as you stand in this tranquil setting it is hard to believe that it was once the entryway into the mighty kingdom of East Anglia. That fact may never have been discovered had it not been for the perseverance of a local landowner and the dogged determination of an amateur archaeologist who uncovered the hidden wonders of Sutton Hoo.

It was during the hazy, warm summer of 1939, on the eve of World War II, that Edith Pretty asked Basil Brown to investigate Mound 1 situated on her estate at Sutton Hoo. Suffolk is famously flat and, with this in mind, she had been intrigued by the 18 or so perfectly formed mounds dotted across the fields close to her house. Surely these couldn't be random hillocks? Pretty had approached Vincent Redstone, a local historian, and Ipswich Museum curator, Guy Maynard, to research into the strange contours back in the spring of 1938 and everyone was in agreement: Basil Brown was the man to lead the dig. Brown had many interests, including astronomy and a love of the land he inherited from his father, a local farmer. With this love came an understanding of the soil, which would prove to be very useful as he began to peel away the layers of earth. Archaeology was another passion and, although he never received any formal training, he was extremely knowledgeable, working for Ipswich Museum as an archaeological contractor on various Roman digs before embarking on the career-defining excavation at Sutton Hoo.

DIGGING IN

Brown gathered together a dedicated team of archaeologists at the behest of an enthusiastic Pretty, and in the summer of 1938, they began work on three of the mounds for the princely sum of 30 shillings a week. It was back-breaking labour as they sifted through the soil but it wasn't long before their efforts were rewarded. Within the first mound (later known as Mound 2) they discovered iron knives, a bronze brooch, a silver buckle, shards of decorated blue glass, two ornate bronze discs and the end of a sword. The second mound (later Mound 3), revealed the cremated remains of a man, surrounded by pieces of broken pottery

The mounds in an otherwise flat Suffolk landscape led Edith Pretty to suspect something was going on

The ornate shoulder clasp consists of four panels each decorated with geometric shapes and animals in opaque blue glass, garnet cloisonné and millefiori

Frank and Edith Pretty bought Tranmer House in 1926 for the princely sum of £15,250. It was passed on to her son, Robert, when she died in 1942

and a partially oxidised axe head. The final mound (later Mound 4), yielded yet more treasures. Luxurious fabric, pieces of bone and slivers of bronze were all removed from the earth.

Thieves had looted the mounds, probably during the Tudor era, but there were enough thrilling finds to suggest that Sutton Hoo was a highly significant archaeological site. Pretty released the objects to Ipswich Museum and it was decided that a new dig would be set up the following year. Little did they realise that they had only begun to scratch the surface and that the strange pieces of iron, found at Mound 2 were enticing clues heralding a far greater discovery.

A SHIP BENEATH THE SOIL

It was 1939. Talk of war was in the air and an ominous cloud hung over Europe, but in a field in East Suffolk, the atmosphere was far more anticipatory. By May, Brown had returned to Sutton Hoo, accompanied by a number of keen archaeologists who had been encouraged by his earlier finds. He was also helped by Pretty's gardener John Jacobs, gamekeeper William Spooner and 12-year-old son Robert who was

The spectacular treasure and priceless artefacts are displayed in the Early Medieval gallery of the British Museum, thanks to Edith Pretty's generous donation

Basil Brown was alone in his initial assessment that the findings were Anglo-Saxon, not Viking, in origin

enthralled at the thought of finding treasure. Although he hoped for a pot of gold, the boy could never have imagined the wonders that had lain for centuries beneath his feet, soon to be revealed.

When Jacobs found a small nugget of iron, he showed Brown who instantly recognised its purpose. This was a rivet used to build ships. Five more rivets were discovered in the shape of a prow. The dig was halted while Brown determined the next step. If his hunch was right he would need a far wider trench to accommodate this find.

As the sandy soil was carefully brushed aside, the faint impression of a ship began to emerge. It was 27-metres (90-feet) long and, although the wood itself had disintegrated, the elegant outline was clearly visible and the presence of tholes suggested it could have been rowed as well as sailed. There had clearly been a wooden chamber in the centre of the ship and at last Mound 1 could be identified. This was a magnificent ship burial, but what treasures lay within and to whom had it belonged? Brown instinctively believed it to be of Anglo-Saxon origin but the others assumed that it would be a Viking vessel.

With the aid of Cambridge University archaeologist Charles Phillips and his academic team, they began to uncover its secrets. A sword with gold and garnet adornments, spears, a battle axe, drinking horns dipped in silver, pieces of a lyre, delicate silver spoons, breathtakingly beautiful jewellery, an impressive whetstone, stand and rod, were all gently removed from the soil. With little in the way of specialist equipment, the experts and amateurs worked together with whatever tools Pretty could retrieve from Tranmer House. Spoons, a pair of bellows, pastry forks

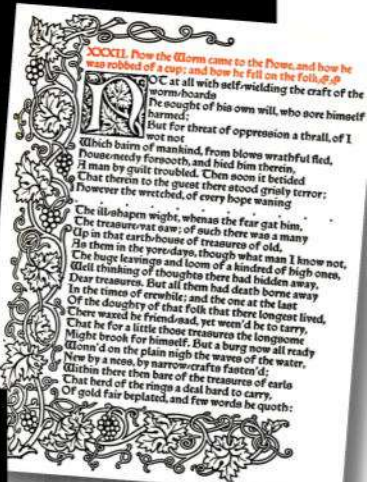
> "The boy could never have imagined the wonders that had lain for centuries beneath his feet"

BEOWULF

Academics have noted distinct similarities between the epic poem and the great burial chamber at Sutton Hoo

Beowulf is one of the most famous and important examples of Old English literature set out as an epic poem. The legendary tale is set in 6th century Scandinavia and concerns the story of Beowulf, the mighty hero, Hrothgar, King of the Danes, and the monstrous creature, Grendel. When Beowulf eventually dies, his people give him a funeral befitting that of a legendary hero. His body is cremated and a barrow is created in his memory, complete with magnificent offerings for the noble King of the Geats, such as a beautiful helmet and glittering sword.

The similarities between the epic poem and the magnificent burial chamber at Sutton Hoo has led many academics to believe that the East Anglian royal family Wuffingas were descendants of the royal Geatish Wulfings and that the burial mound at Sutton Hoo is thought to be that of King Raedwald, who was a member of the Wuffings family.



XXXII. How the Worm came to the Howe, and how he was robbed of a cup; and how he fell on the folk.

NOT at all with self-wielding the craft of the worm-hoards
He sought of his own will, who sore himself harmed;
But for threat of oppression a thrall, of I wot not
Which bairn of mankind, from blows wrathful fled,
House-needy forsooth, and hied him therein,
A man by guilt troubled. Then soon it betided
That therein to the guest there stood grisly terror;
However the wretched, of every hope waning

The ill-shapen wight, whenas the fear gat him,
The treasure-vat saw; of such there was a many
Up in that earth-house of treasures of old,
As them in the yore-days, though what man I know not,
The huge leavings and loom of a kindred of high ones,
Well thinking of thoughts there had hidden away,
Dear treasures. But all them had death borne away
In the times of erewhile; and the one at the last
Of the doughty of that folk that there longest lived,
There waxed he friend-sad, yet ween'd he to tarry,
That he for a little those treasures the longsome
Might brook for himself. But a burg now all ready
Wonn'd on the plain nigh the waves of the water,
New by a ness, by narrow-crafts fasten'd;
Within there then bare of the treasures of earls
That herd of the rings a deal hard to carry,
Of gold fair beplated, and few words he quoth:

The Old English epic was translated in the early 19th century and continues to be a much-loved story to this day

and even a coal shovel were utilised to remove metal fragments that would, when reassembled, become the universally recognised Sutton Hoo helmet and mask. Byzantine silver bowls, a shield adorned with birds and dragons and a large purse filled with 40 Merovingian coins suggested that this was an Anglo-Saxon ship just as Brown had thought all along. All in all, 263 mesmerising objects were discovered in the burial chamber. It was quite simply one of the greatest British historical discoveries and it had been uncovered by an amateur archaeologist with his trowel and some kitchen implements.

FILLING IN GAPS

The outstanding beauty of the objects discovered is undeniable but the Sutton Hoo finds are also of great significance historically. They have helped us to understand the six-and-a-half centuries of British history for which archaeological proof is relatively weak. Between the end of Roman rule and the bloody outcome of the Norman Conquest, the people of Britain were originally thought to have regressed, both spiritually and culturally. This was, historians claimed, a time of ignorant superstition and brutish behaviour. With little in the way of evidence to prove otherwise, the fallacy continued unchallenged and the period was generally known as the Dark Ages.

Discovery of the magnificent treasures at Sutton Hoo have thrown a bright light upon this time and the much-maligned Anglo-Saxons. By studying the artefacts we can see a sophisticated belief system that melds together aspects of Paganism and Christianity. The craftsmanship clearly shows a level of skill that, up until the burial ship discovery, was unknown. Influences from all over the world are visible, suggesting that these mighty warriors were cosmopolitan and far from the isolated inbred thugs they were previously thought to be. The burial finery shows power, majesty and a sense of great honour. These cultured people had travelled far and wide, picking up knowledge and skills as they went. Bitumen, discovered in the burial mound, can be traced back to the Middle East and is thought to have been used by the Anglo-Saxons to seal their ships.

The finds at Sutton Hoo have proven once and for all that the Dark Ages were far from backward. They were in fact masters of many crafts and part of a civilised era. Brown lit the candle that casts light upon these previously misunderstood times.

After the outstanding success of the 1939 dig, many archaeologists have returned to the site, fascinated by the sleepy Suffolk landscape and the secrets it still holds. Subsequent investigations have explained why no body was uncovered

> “The finds are of great significance historically”

Who Is Buried at Hoo?

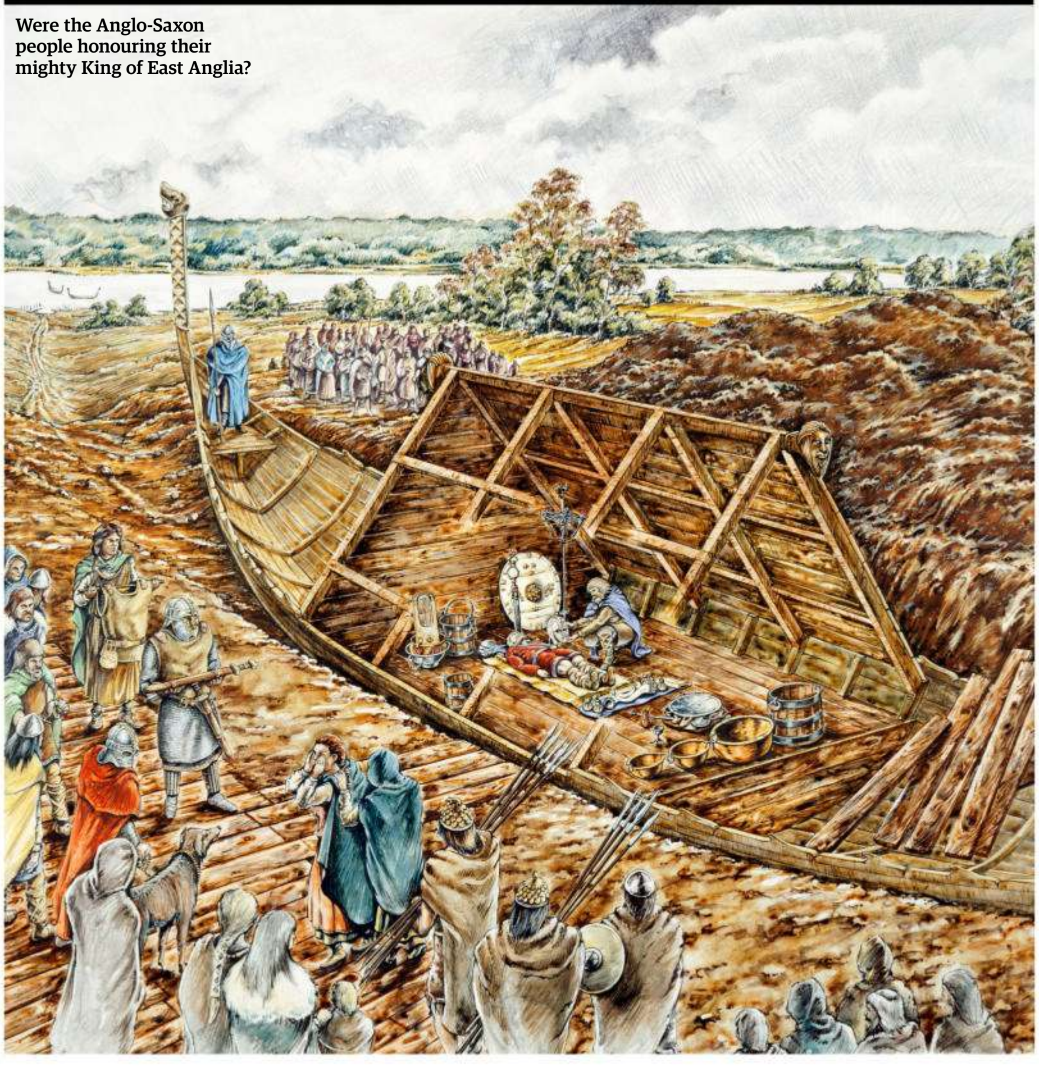
Finding the burial ship was extremely exciting, but finding out who was placed inside it would be the biggest thrill of all

Archaeologists have unearthed many tantalising clues as to who was buried beneath Mound 1 and when examined collectively, they point to a very royal conclusion. The first clue is the enormous effort it must have taken to drag the ship all the way uphill from the River Deben to the perfect spot, where it was then lowered into a deep trench before building the wooden burial chamber, decorating it, and finally covering the entire ship beneath a burial mound.

Scholars are confident that the body was interred in the early 17th century, during the Anglo-Saxon period. The second clue is that ship burials were highly uncommon at this time, so whoever was given such a dramatic and expensive send-off would have been very important. This is reinforced by the beautiful artefacts discovered in the chamber. The grave gifts were of the highest quality and came from as far away as Constantinople, suggesting this was the resting place of a well-travelled and most important member of society; a king.

So which king is the most likely candidate? Most historians believe it belonged to Raedwald, ruler of the Kingdom of East Anglia, who is thought to have died around 627 CE. Some of the grave goods suggest a Pagan ruler, while others possess Christian elements. This fits with King Raedwald, as it is known he struggled to decide which religion to follow. He even built a temple that contained two altars; one Pagan, the other Christian. The majesty of the funeral and the offerings in the chamber certainly suggest a prominent king such as Raedwald.

Sadly, without any DNA evidence or useful inscriptions to rely upon, it is unlikely we will ever know for sure.



Were the Anglo-Saxon people honouring their mighty King of East Anglia?

within the burial chamber. The highly acidic, sandy soil that Brown complained of had dissolved the royal corpse along with the wooden timbers.

A ten-year excavation starting in the early eighties revealed further burial sites, including a second magnificent ship burial barrow. While Mound 14 contained a burial chamber for a high-status female, possibly a queen, Mound 17 revealed the double burial of a beloved warrior and his horse. Beautiful artefacts and ceremonial weaponry suggest that this was a well-respected soldier deserving of an honourable burial.

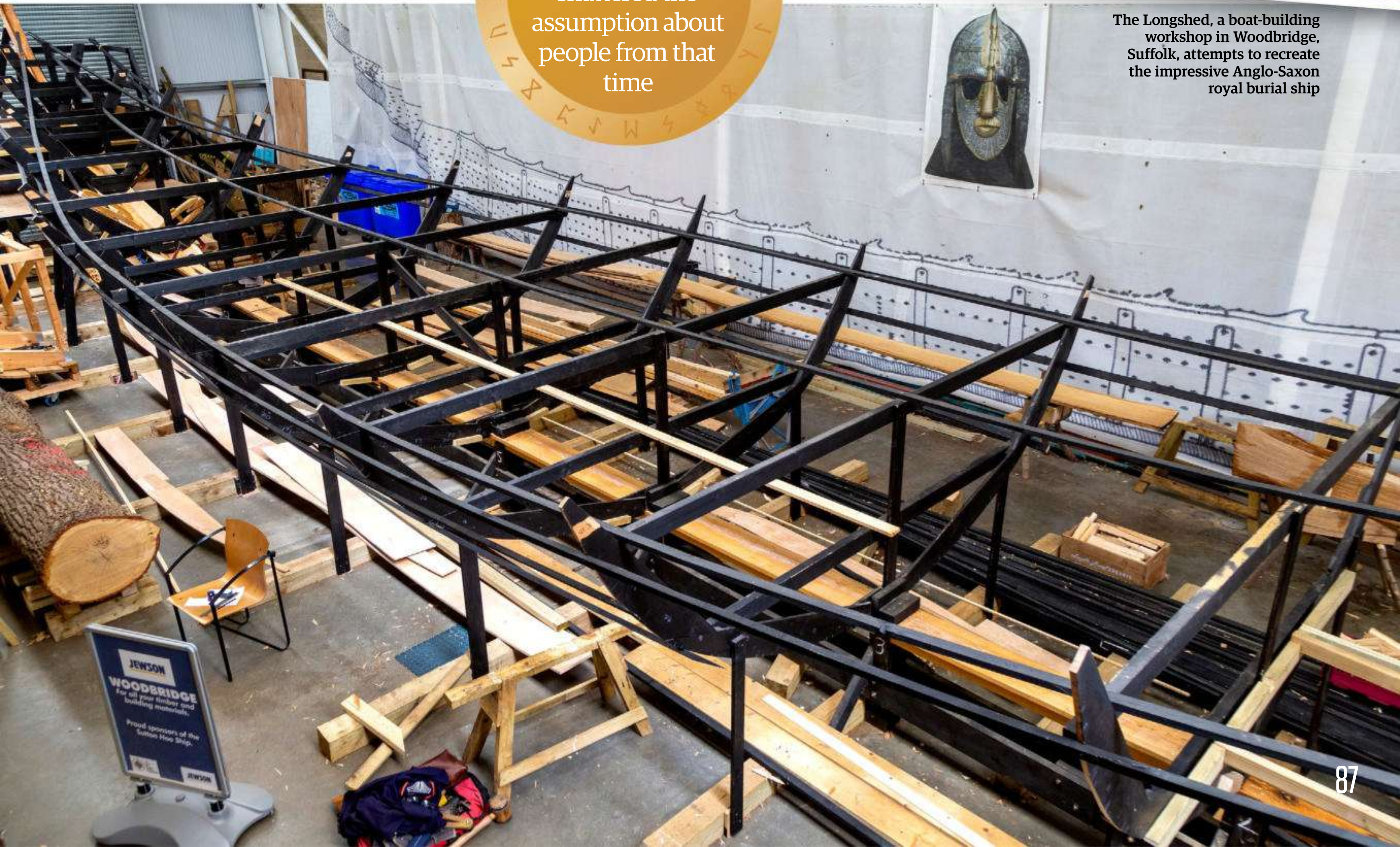
Sadly, not every body recovered seemed to have been afforded such a dignified resting place. Thirty-nine shallow graves were located between the royal barrows. It was clear that they had succumbed to a violent end and, judging by the accompanying gallow holes and signs of shackles, they had all been executed.

More recently, additional Anglo-Saxon cemeteries have been unearthed, predating the royal burial mounds of Sutton Hoo and situated beyond the original dig site. Objects found, such as bowls, combs, beads and a bucket, help to shed light upon the sociological day-to-day lives of the lower ranking members of society,

Modern-day geophysics surveys and ground penetrating equipment will undoubtedly reveal yet more surprises, but probably none so magnificent as those discovered with a coal shovel, a penknife and a pastry fork.

An overview of Sutton Hoo clearly shows the multiple mounds that fascinated Edith Pretty into instigating the first dig in 1938

The findings at Sutton Hoo shattered the assumption about people from that time



The Longshed, a boat-building workshop in Woodbridge, Suffolk, attempts to recreate the impressive Anglo-Saxon royal burial ship

The MARY ROSE

In the murky depths of the Solent, Henry VIII's beloved ship lay waiting for 437 years

Written by Jessica Leggett

King Henry VIII's favourite flagship, the Mary Rose, served in the English navy for over 30 years before its demise on 19 July 1545. The ship sank while fending off an attempted French invasion during the Battle of the Solent, taking the lives of most of its crew while the rest of the English fleet, and the King, watched in horror. The cause of the sinking has been debated ever since, but it was undeniably tragic for a vessel that had spent so many years at sea. However, the ship's loss was not in vain, as the French eventually abandoned their invasion after running low on supplies and failing to gain a strategic advantage.

After the French retreated, the English attempted to salvage the Mary Rose. The King's close friend, Charles Brandon, Duke of Suffolk, led the recovery effort, hiring Venetian salvage operators to raise the ship. Although some weapons and rigging were successfully retrieved from the wreck, the task ultimately proved too difficult. The ship remained stuck underwater, lying on its starboard side and exposed to the rough elements of the sea.

EXCAVATION AND THE RAISING

The Mary Rose had laid at the bottom of the Solent for over 400 years when Alexander McKee, a historian and diver, resolved to find it. He started the search through Project Solent Ships, which he founded to investigate historic wrecks in the Solent. However, what McKee hoped for most of all was the elusive Mary Rose.

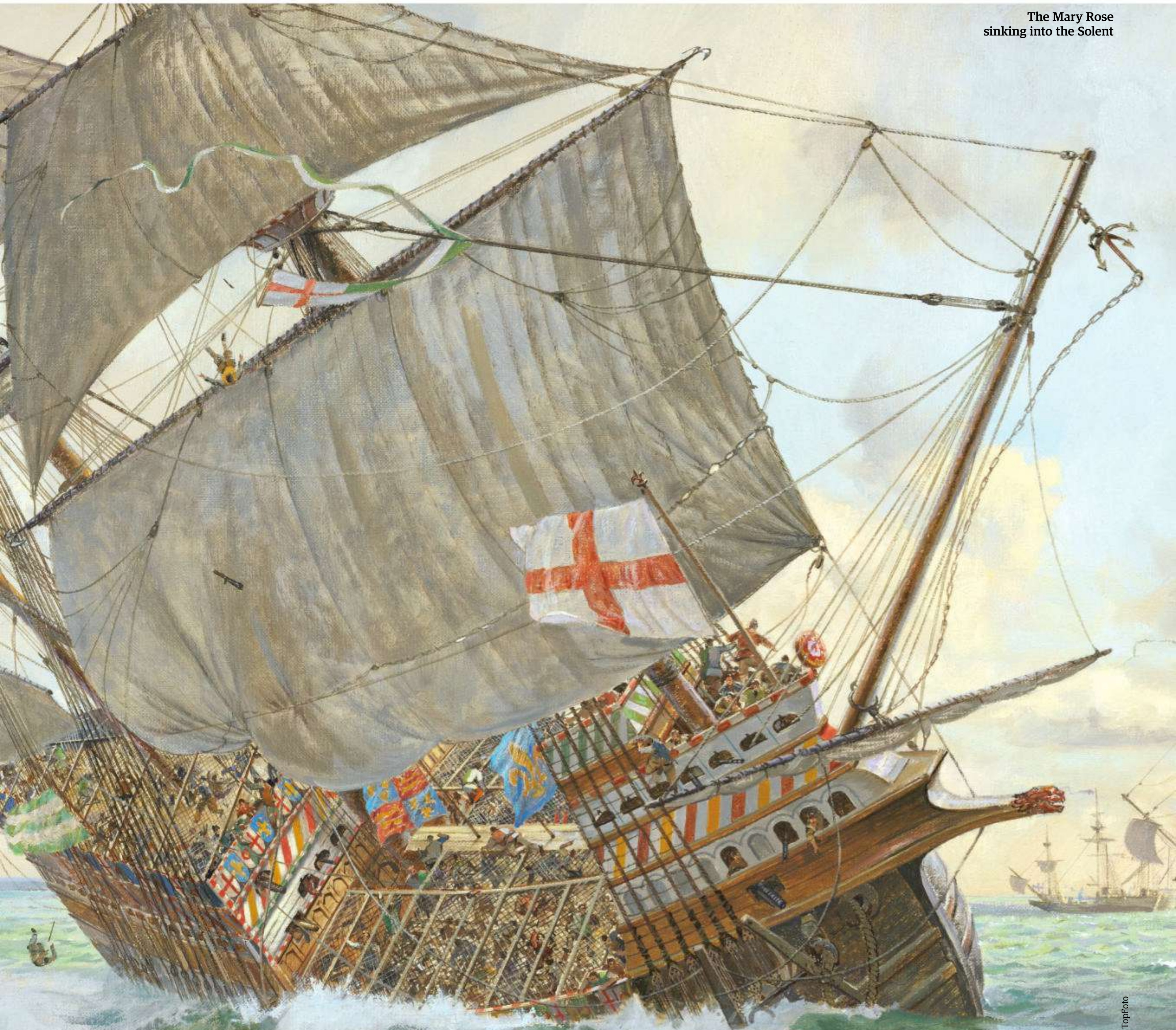
Sonar technology was used to scour the seabed for the possible location of the wreck in 1967-68, and they finally found that something was indeed buried at the bottom of the Solent. A committee was founded in 1967 and Margaret Rule, a professional archaeologist, was brought on board as it became increasingly clear that expertise in excavations was very much needed.

In order to protect the ship from treasure hunters and scavengers, its location was clouded in secrecy while the committee campaigned for legal protection of the site. The project led to The Protection of Wrecks Act, which was successfully passed in February 1973 and declared that the Mary Rose had become a site of national historic interest.

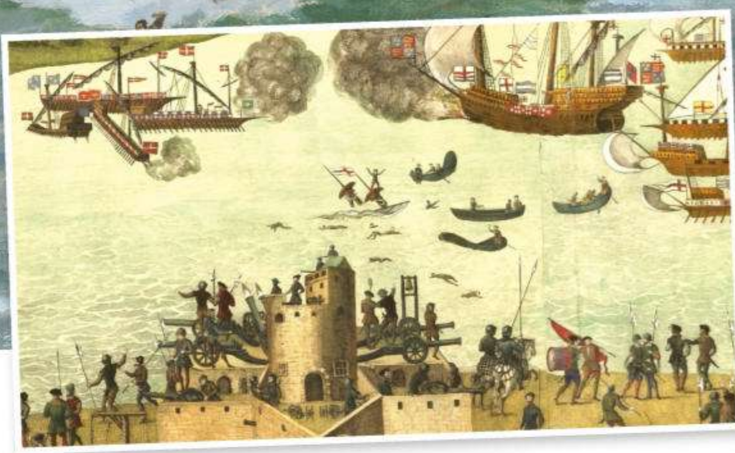
For the next three years, a team of volunteer divers began to explore the area and excavated a few pieces of the ship's wooden timbers. However, the most tantalising moment came when one of the divers found three of the Mary Rose's port frames, proving that they really were onto something extraordinary.

By 1978, a series of excavations showed that a major part of the ship had survived. For the first time, the idea of a full excavation became a real possibility. It was time to step up the project

The work on the Mary Rose still influences underwater archaeology

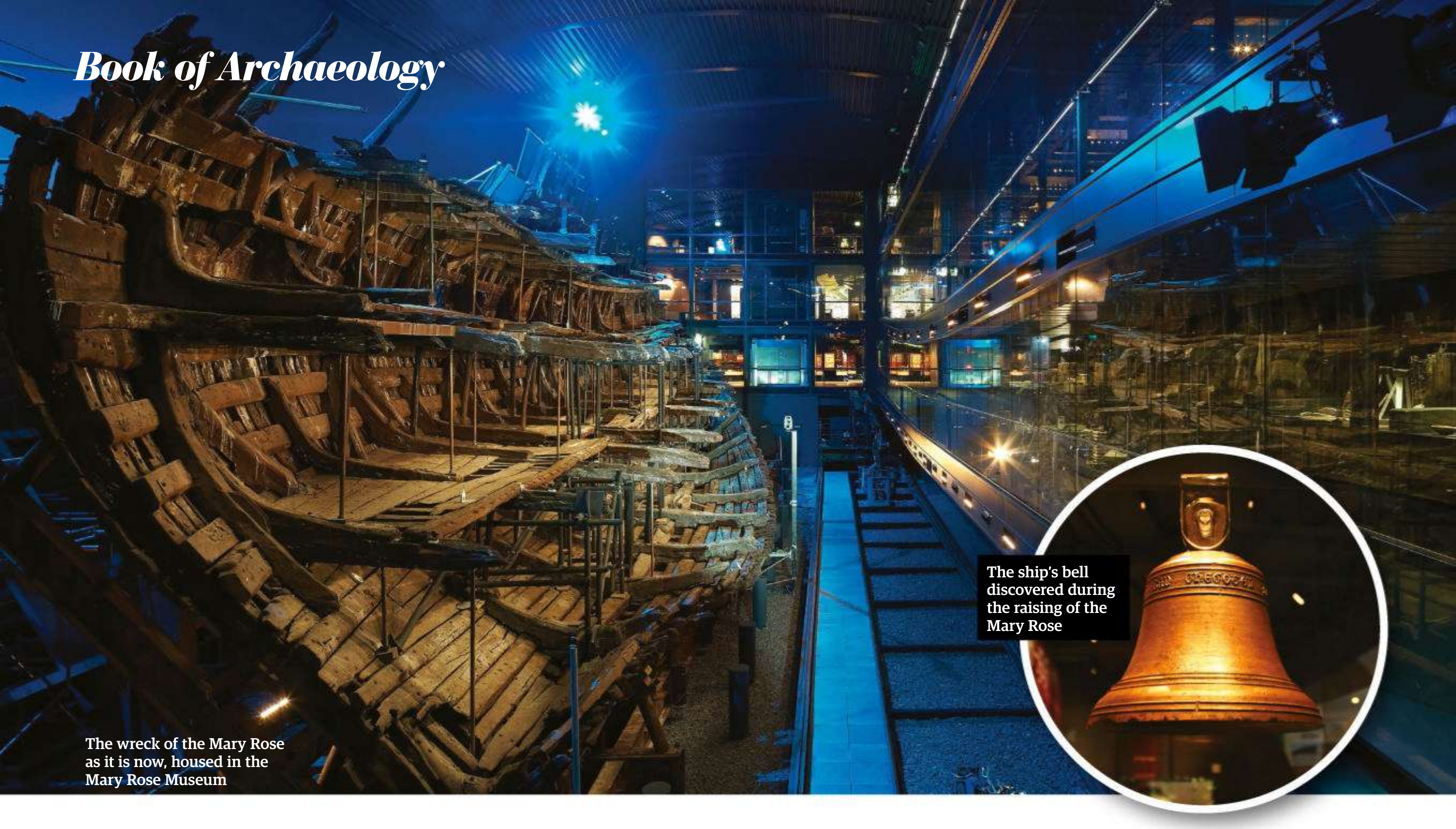


The Mary Rose sinking into the Solent



The Cowdray engraving, dating from the 18th century, is a copy of a contemporary painting dating between 1545 and 1548. It depicts the Battle of the Solent and the sinking of the Mary Rose

© Mary Rose Trust, Mary Rose Museum, Getty Images, TopFoto



The wreck of the Mary Rose as it is now, housed in the Mary Rose Museum

The ship's bell discovered during the raising of the Mary Rose

and the following year the Mary Rose Trust was founded to completely uncover and raise Henry VIII's famous flagship.

Between 1979 and 1982, a whole wealth of Tudor artefacts were recovered and meticulously recorded with thousands of volunteers contributing, including over 500 divers from all around the world. Even the president of the Trust, the then-Prince Charles, joined the project in 1974 and he personally took part in nine of the dives.

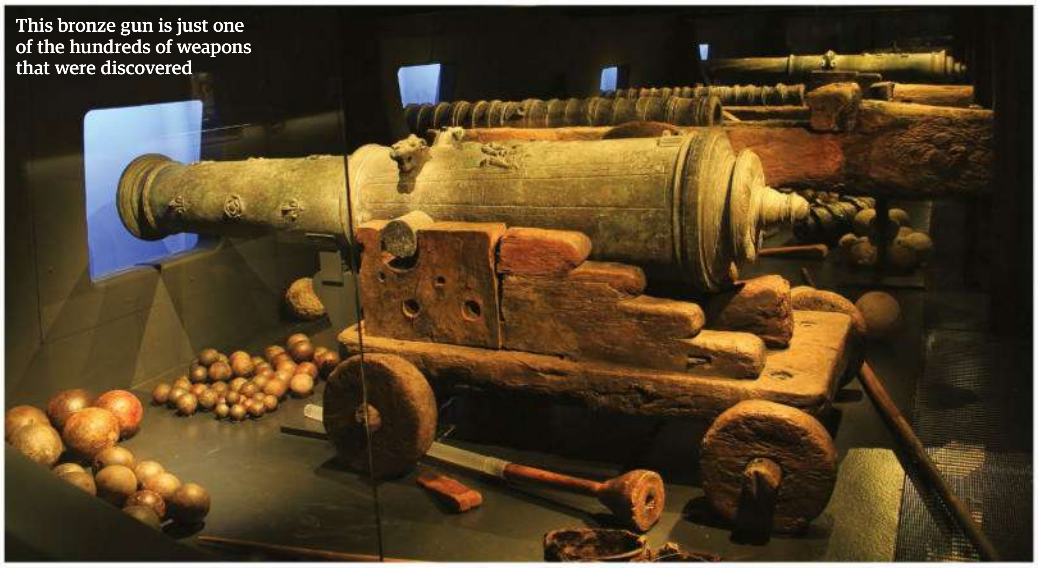
Raising the Mary Rose caused a series of logistical problems, though. The ship had survived for so long underwater because it had become covered in silt, which had acted as a barrier against decay and the Solent's strong currents. Raising the vessel would have to be done carefully and efficiently to prevent further damage. The date was set: 11 October 1982.

> "At the time of its discovery, underwater archaeology was in its infancy"

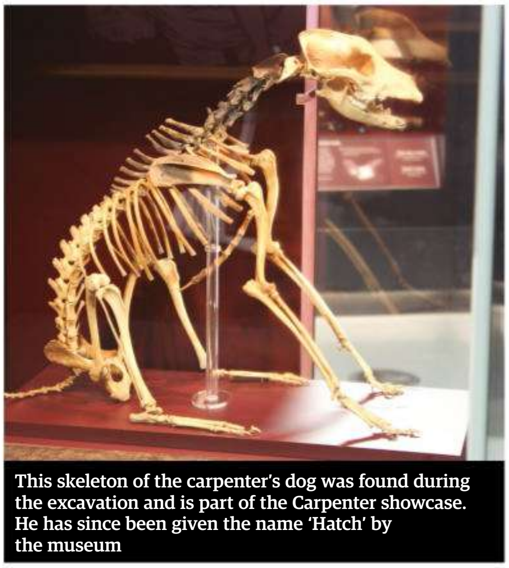
In addition to being covered in silt, the ship had become suctioned to the seabed, which is why contemporary attempts to rescue it had failed. To solve this, it was decided that the Mary Rose would be wired up to a lifting frame with hydraulic jacks on the legs, and they managed to raise the ship just a few centimetres, freeing it from the silt. The hull, now hanging from the frame, was then transferred underwater into a specially designed support cradle. Bolstered from above and below, it was lifted onto a barge and taken to Portsmouth Harbour under the watchful eyes of millions of people around the world.

The last crucial step in the process was conservation. In order to stop the ship from disintegrating, it was sprayed with fresh, chilled water in a controlled atmosphere to keep it damp, prevent the growth of organisms and to remove salt from the wood. This was a process that took over ten years.

From 1994 onwards, the remains were sprayed with a water-soluble wax, polyethylene glycol, which slowly replaced the water and dried the ship out while preventing the cells in the wood from collapsing. After undergoing 30 years of constant treatment from spray jets, they were eventually



This bronze gun is just one of the hundreds of weapons that were discovered



This skeleton of the carpenter's dog was found during the excavation and is part of the Carpenter showcase. He has since been given the name 'Hatch' by the museum

BRINGING UP HISTORY

The head of interpretation at the Mary Rose Museum, Christopher Dobbs, and head of development, Sally Tyrrell, share experiences on the evolving project of the Mary Rose

Just how historically significant is the Mary Rose?

Christopher Dobbs: The Mary Rose was very significant in terms of underwater excavation. Everything that we have discovered, and continue to discover, has been something completely new to the field of naval architecture. Also, the fantastic variety of artefacts that were salvaged provide us with a real cross-section of Tudor life and bring us knowledge from so many different areas – for example, in terms of medical instruments and domestic hygiene. They give us the ability to rewrite what we know about Tudor history and provide us with a multilayered glimpse of society.

Sally Tyrrell: Thanks to the hard work of Chris and the diving and excavation team, all of the artefacts have been meticulously logged and conserved with unique numbers so that we can display all of them in their rightful places in the museum. For instance, we know that everything you see in the carpenter's case belonged to him. Visitors have the chance to see the artefacts in terms of their context and witness what has been achieved with the Mary Rose and its significance in history.

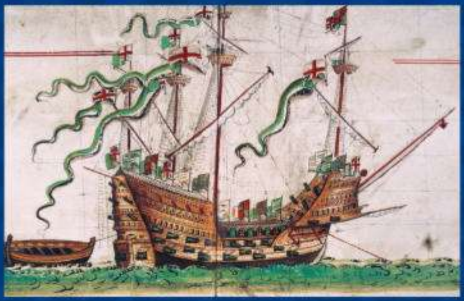
Approximately 19,000 artefacts were salvaged from the wreck – are there any in particular that really struck you as fascinating?

CD: Many of the artefacts are what I like to call 'extraordinarily ordinary' – you wouldn't see such objects elsewhere. Out of all of them, though, it has to be the wooden shovels that are my favourite! I can remember excavating a shovel on one of my dives and holding it up to look at it. At that moment, it hit me that the last person to have touched this shovel would have been a Tudor. It was an emotional moment that I will always remember and I hope visitors will experience the same intangible moments here at the museum.

ST: What we really want people to say when they tell their friends and family about their visit to the museum and see the artefacts that we have on display here is that you have to see it to believe it!

Watching the footage of the raising from 1982, there is an incident where the frame holding the wreckage appeared to snap. What went through your mind?

CD: At that moment I was actually being interviewed, so when it happened it was hard to comprehend what was going on! Although the frame didn't snap, it was absolutely a heart-stopping moment. We were actually preparing to cut a cake in celebration and, because of that, the cake wasn't cut until about midnight, when the wreck was safely on the barge! The wreck actually dangled over the barge for hours because they were being so careful, which we completely understood, but at the same time we were so desperate from the whole process to hurry up and to get the Mary Rose to safety. Over 27,000 dives were at stake, along with the time and effort of thousands of volunteers.



There are a few theories that have been put forward to explain why the Mary Rose sank. What do you believe happened?

CD: There are a lot of what I like to call 'conspiracy theories'. I think the best option is to go back to eyewitness accounts, in particular an account from a survivor, who claimed that the Mary Rose had fired all of her guns on one side and as she was turning she got caught by a gust of wind. The water then flooded through the open gunports. When such an account exists, I don't see why anyone would bother with other conspiracies! We do continue to find out more so perhaps it was even a combination of factors. There is one thing we know for certain and that is the ship did not sink on her maiden voyage. This is a common misconception and actually the Mary Rose was 34 years old when it was sunk in the Solent.

turned off in April 2013, allowing the vessel to undergo its final stage of conservation as it air-dried in controlled conditions.

THE IMPACT ON ARCHAEOLOGY

The discovery and raising of the Mary Rose was not only significant for improving knowledge of the Tudor era, it had a huge impact on underwater archaeology and led to many innovations.

At the time of its discovery, underwater archaeology was a discipline in its infancy, having begun to develop its techniques just a few years earlier. Never had such a complex and ambitious project been undertaken in the UK, and it was an exercise in interdisciplinary collaboration that has informed hundreds of projects since. It was the archaeologists' job to determine how much of the Mary Rose had survived, meticulously excavate the interior of the ship using sophisticated technology to accurately record the locations of all the finds, and lastly, disassemble the ship to prepare it to be lifted from the seabed.

As well as archaeologists, the team included museologists, ship historians, salvage engineers, structural engineers and naval architects. The expertise of such a large team made the project a success that would stand as a landmark moment for underwater archaeology. The team of 500 divers who worked on the Mary Rose also became experts in maritime archaeology and they took their knowledge with them, working on other projects and furthering expertise globally.

It was not just in its discovery, excavation and raising that the Mary Rose influenced the future of archaeology. As recently as 2020, the warship has shed new light on long-standing problems of conserving waterlogged wood. Scientific analysis of samples of the hull has revealed that it may be a specific combination of chemical components that cause wood to deteriorate after being lifted out of the sea. This new information can be used in the continuing work on the Mary Rose, but also has huge implications for other archaeological material recovered from the seafloor. Thanks to the Mary Rose, hundreds – if not thousands – of other discoveries can now be better preserved for future generations.

Just over three decades after the Mary Rose was finally raised to the surface, it was placed permanently on display in the Mary Rose Museum, a brand new, purpose-built museum that opened in 2013. The museum is located in Portsmouth Historic Dockyard and the shipwreck is kept under controlled conditions with constant monitoring of temperature, humidity, and lighting to ensure conservation. The museum also displays the unique collection of Tudor artefacts that were salvaged from the wreck and is dedicated to telling the story of the ship, the crew, and the excavation and raising. Finally, after almost 500 years on the seabed, the Mary Rose and its artefacts can now be admired in all their glory.

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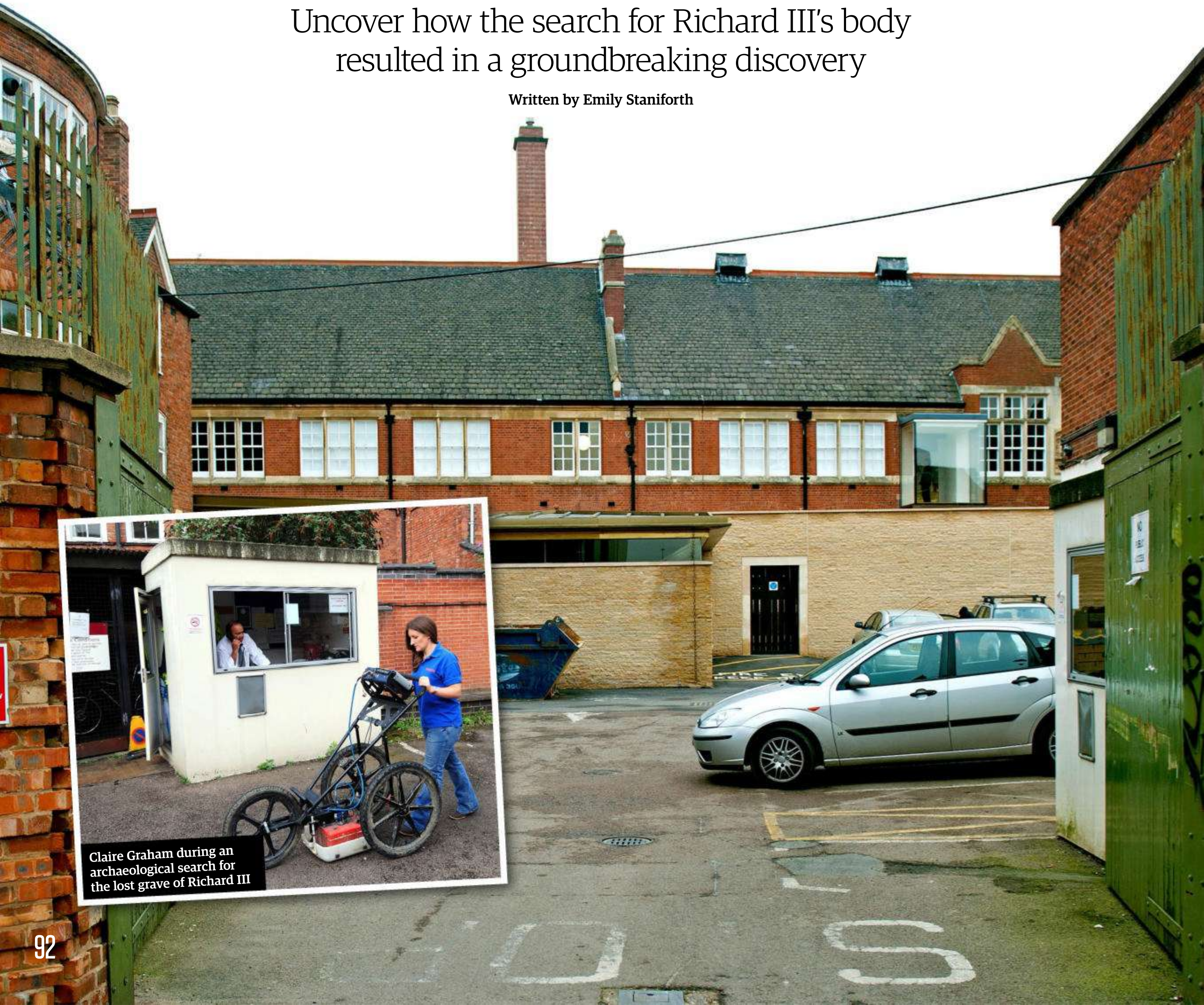
Finding the KING in the CAR PARK

Uncover how the search for Richard III's body resulted in a groundbreaking discovery

Written by Emily Staniforth



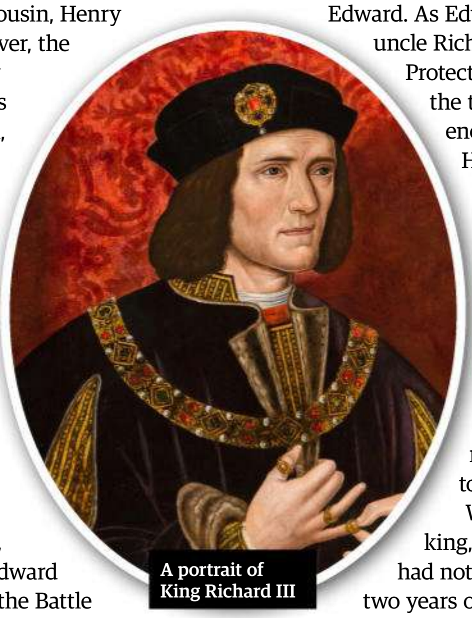
Claire Graham during an archaeological search for the lost grave of Richard III

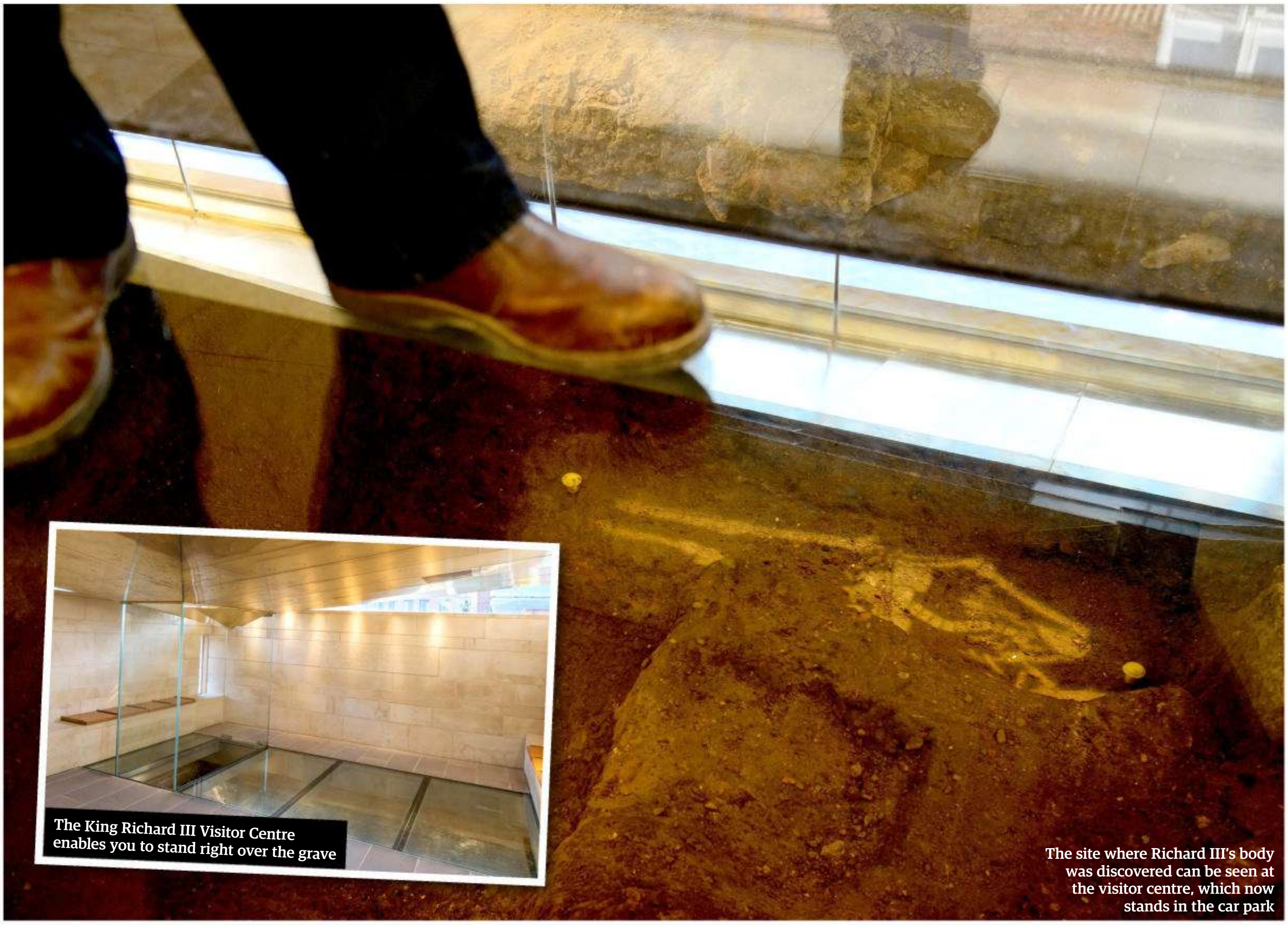
On 4 February 2013, the University of Leicester announced that they had discovered the body of a long lost medieval king. King Richard III, the last monarch of England's Plantagenet dynasty, was killed at the Battle of Bosworth Field in 1485 and his final resting place had remained a mystery for over 500 years, until a group of determined archaeologists and admirers of the King decided to locate his grave. After a period of intense research, campaigning and scientific testing, it was confirmed that the medieval ruler had in fact been found… in a car park. Yes, the remains of English royalty were finally uncovered underneath the parking lot of Leicester City Council's social services. But how did he get there, and how was he found?

WHO WAS RICHARD III?

When Richard was born in 1452, it would have seemed highly unlikely that he would ever become the King of England. As the son of Richard, 3rd Duke of York and Cecily Neville, he was a Plantagenet, the royal dynasty that descended from King Henry II. At the time of Richard's birth, his father's cousin, Henry VI, was on the throne. However, the Duke of York possessed lofty ambitions and challenged his cousin for the English crown, resulting in a civil war known as the Wars of the Roses (1455-1487).

As the Wars of the Roses progressed throughout Richard's childhood, he suffered the loss of his father and elder brother, Edmund, in their battle for the crown. His oldest brother, Edward, took on the mantle and led the Yorkist troops against Henry VI's Lancastrian army, eventually becoming King Edward IV after achieving victory at the Battle of Towton in 1461. When Edward died in 1483, he left the crown to his teenage son, also called Edward. As Edward V was a minor, his uncle Richard was appointed as Lord Protector to act as regent until the time when Edward was old enough to rule independently. However, the young Edward mysteriously disappeared after he and his younger brother were confined to the Tower of London by Richard, who then ensured that he was crowned King Richard III. It is widely believed that Richard had his young nephews murdered in order to facilitate his usurpation. While Richard had become king, the Lancastrian threat had not diminished. After only two years of rule, Richard's army


A portrait of King Richard III


The King Richard III Visitor Centre enables you to stand right over the grave

The site where Richard III's body was discovered can be seen at the visitor centre, which now stands in the car park

© Alamy, Getty Images

faced Lancastrian forces, which were now headed by a young Henry Tudor, at Bosworth Field in Leicestershire. The encounter ended with a Yorkist defeat, and King Richard was killed on the battlefield. Henry Tudor went on to become Henry VII of England, while Richard III was confined to the history books as the evil, scheming infanticidal monarch whose reign was eclipsed by the succeeding Tudors.

After the Battle of Bosworth, Richard III's body was taken from the field. It was believed that his remains were then transported to nearby Leicester, where he was buried by a group of Franciscan monks at Grey Friars Church. However, the church was demolished 53 years later, and the grave was lost. In order to explain where Richard's body may have disappeared to, a myth developed stating that at the time of the church's dissolution, the monarch's bones were dug up and thrown into the River Soar. This myth became accepted by the generations that followed, and it seemed as though Richard III was gone forever.

LOCATING THE GRAVE

In 2011, one woman decided that she was simply not satisfied with the current explanation for Richard III's whereabouts. Philippa Langley, a member of the Richard III Society, decided that it was about time to launch a search for the lost monarch. In the 1900s, a couple of historians had cast doubt as to the authenticity of the River Soar tale, but it was not until Langley set the wheels in motion that the potential location of the King was properly considered.

It had been posited by historians before that Richard's body may still lie at the site of the old Grey Friars Church, and that the area had never been excavated in order to look for the remains. However, when Langley approached the University of Leicester Archaeological Services (ULAS), the question arose of how likely discovering the burial place would be with most of the original site of the church now covered by buildings. Over the whole site, there were only a few open areas that would be able to be excavated.

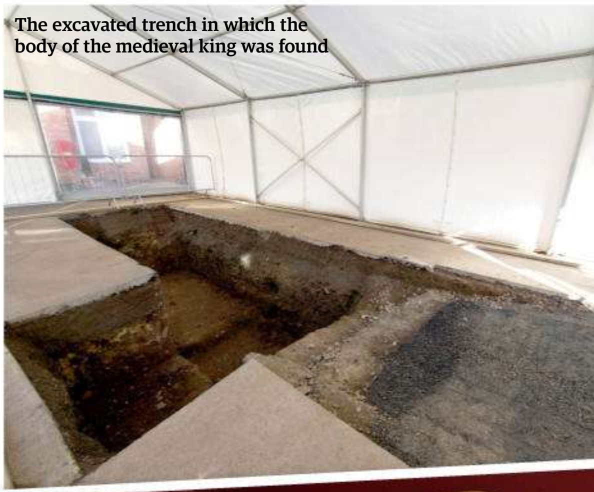
However, Langley remained unperturbed and, having received the backing of Leicester's council, commissioned ULAS to do some initial research. She raised the funds to finance a dig, with contributions from the University of Leicester and Richard III Society, and when archaeologist Richard Buckley suggested beginning in the Social Services car park, a plan was set in motion to begin excavations.

DISCOVERING A KING

Diggers broke ground at the car park on 25 August 2012. In the first trench, an exciting discovery was made of the remains of a medieval building, possibly Grey Friars Church itself. But an even more remarkable find was made: a skeleton.

This skeleton, found in the first few hours of the dig, displayed several signs that made it a possibility it was Richard III, as it was clear

"A myth developed that the monarch's bones were thrown into the River Soar"


The excavated trench in which the body of the medieval king was found

A replica of the skeleton at Bosworth Battlefield Heritage Centre

AN INTUITIVE EXPERIENCE

Did a premonition locate Richard III's grave?

In an interview with *All About History* magazine in 2022, Philippa Langley spoke of how the idea of Richard III being buried below the car park first presented itself to her around 2004, when she had an unusual feeling. "I had an intuitive experience in the northern end of the social services car park where I felt I was walking on his grave," she said. This experience inspired her to start searching for the lost monarch. She added: "On day one of the dig, the very first thing we found were lower leg bones in the place where I'd had that strange experience. It was surreal."

Philippa Langley looks at the reconstructed face of Richard III after the discovery of his body

RICHARD III
Loyaulte me lie

Richard III's body was reinterred in a tomb in Leicester Cathedral in 2015

that the body had suffered wounds that were consistent with the kind that may be inflicted in battle. However, it was the shape of the spine that made this skeleton a real contender. Contemporary accounts of Richard described him as having some kind of spinal deformity, with historians having speculated that he had scoliosis. The skeleton in the car park had a curved spine, which matched what you would expect in a scoliosis sufferer.

In order to establish the identity of the skeleton for certain, a raft of tests and research were undertaken when the body was exhumed in September 2012. The man who the skeleton belonged to was dated to have died between 1455 and 1540, and it was established that the place in which it was discovered used to be below the choir of the Grey Friars Church. The clinching evidence came, though, when genealogists were able to track down living descendents of the medieval monarch and match their DNA to that from the skeleton. In February 2023, the University of Leicester announced that "beyond reasonable doubt, the individual exhumed at Grey Friars in September 2012 is indeed Richard III, the last Plantagenet king of England".

University of Leicester

Richard Buckley announcing the discovery of Richard III's body in a press conference

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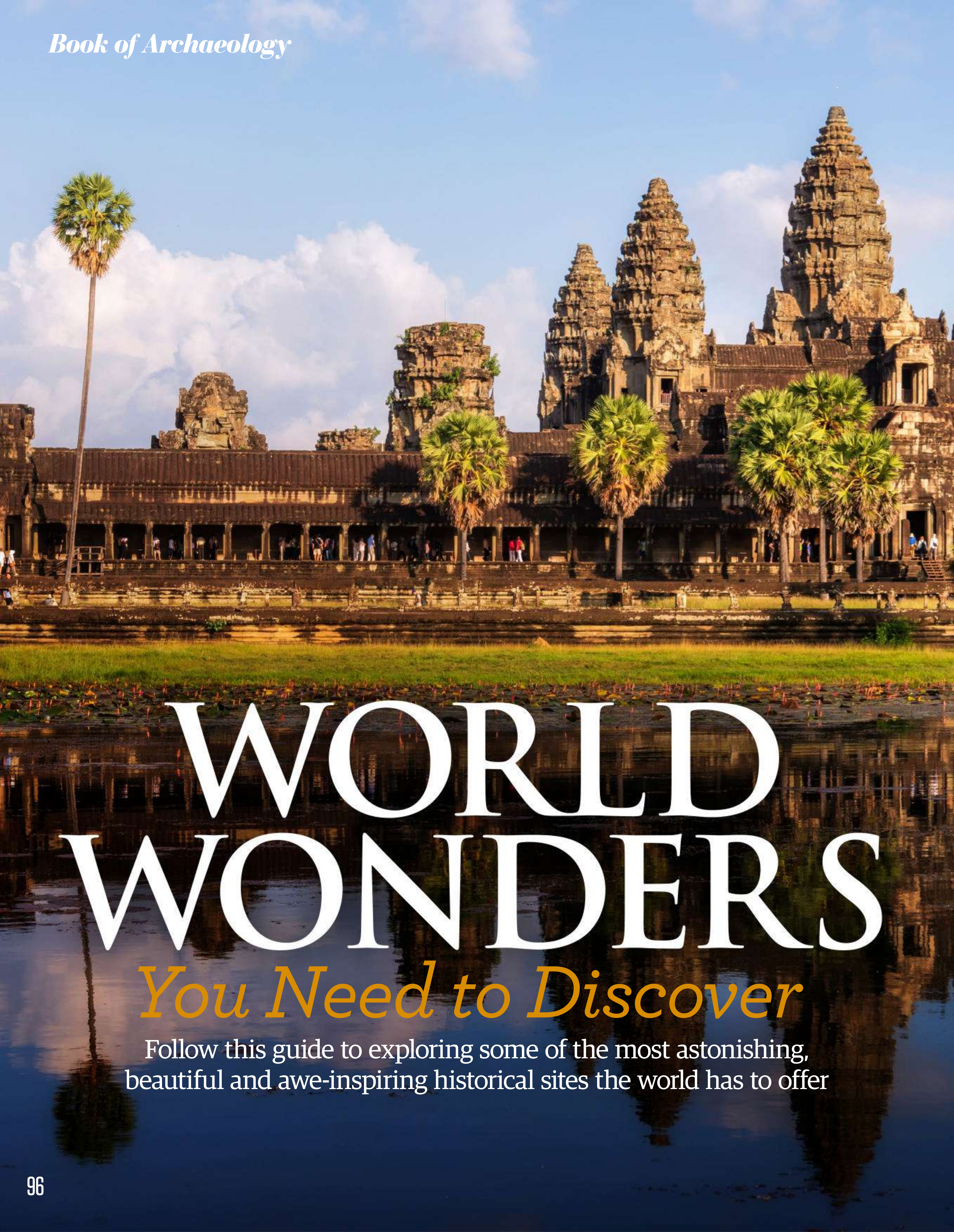
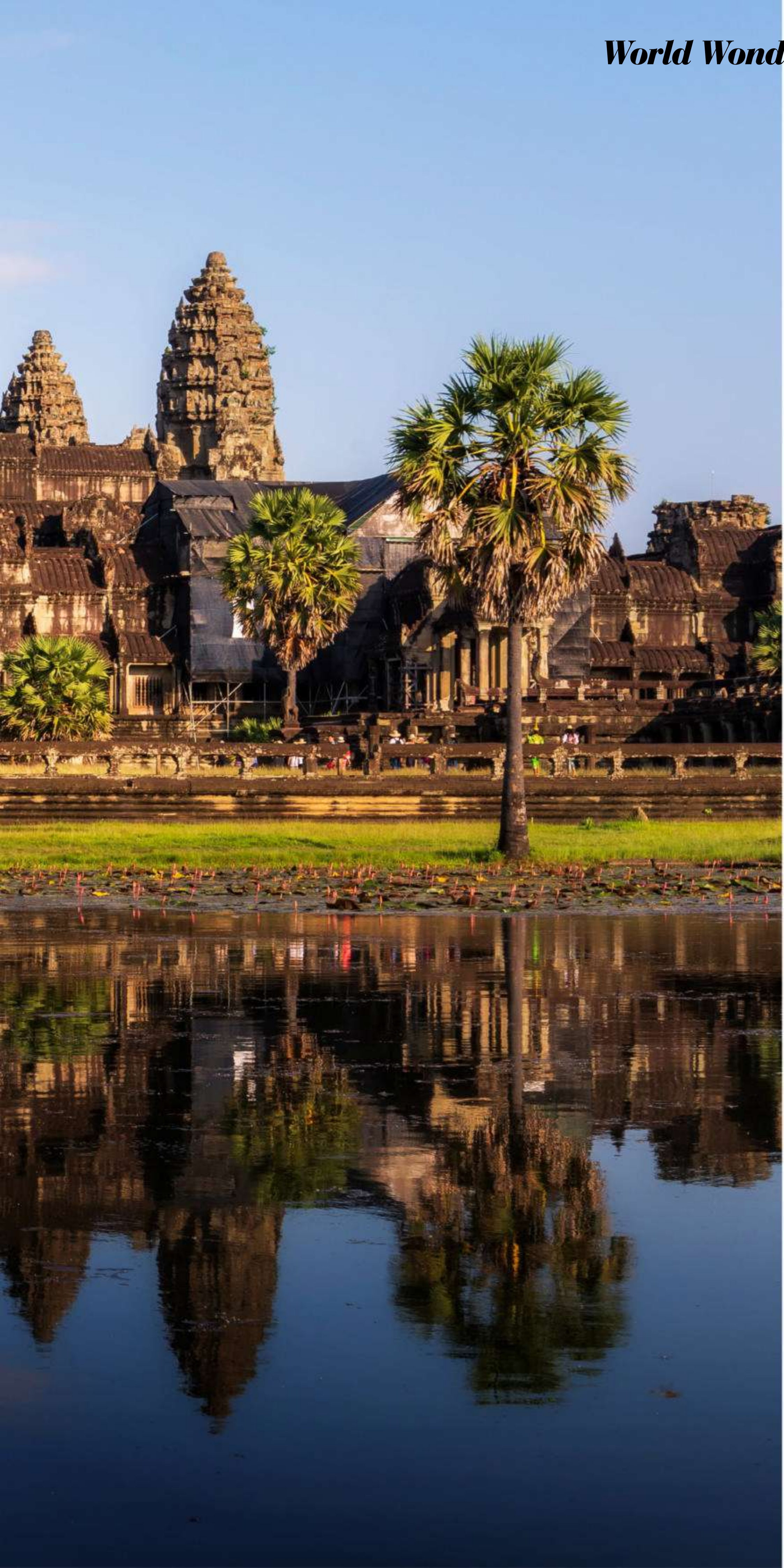


WORLD WONDERS

You Need to Discover

Follow this guide to exploring some of the most astonishing, beautiful and awe-inspiring historical sites the world has to offer



ANGKOR WAT

Explore an incredible terrain of temples, monuments and stunning scenery

● Siem Reap, Cambodia

One of the most important and outstanding archeological sites in Southeast Asia, Angkor Wat spans an impressive 400 square kilometres (154 square miles). The complex comprises the spectacular remains of the capitals of the Khmer Empire, including the temple of Angkor Wat and the Bayon temple. The largest religious monument in the world, Angkor Wat is far more than a ruin of the past, and even today it is inhabited and remains an important religious centre.

Originally built by Suryavarman II in the early 12th century as a symbol to the Hindu faith, the god-kings that followed all endeavoured to create increasingly impressive structures. This has resulted in an awe-inspiring temple complex, with depth and detail so astonishing it must be witnessed to be appreciated. The most striking aspect of Angkor Wat is undoubtedly its vast size and monumental grandeur, but the smaller, more intricate details, such as the 3,000 uniquely carved nymphs, are perhaps the most amazing of all.

© Alamy, Getty Images

POMPEII

Campania, Italy

In 79 CE, Pompeii was a prosperous Roman town with 11,000 inhabitants, an advanced water system and a bustling port. However, that year an eruption from Mount Vesuvius buried the city under mountains of ash, where it lay for 1,500 years. When it was rediscovered, archaeologists found a perfectly preserved Roman city. For 250 years tourists have flocked to the ruins to glimpse a snapshot of the past. From the reconstructed gardens and breathtaking piazza, to the bath buildings and amphitheatre, Pompeii offers a unique insight into what life was like during Pax Romana.

VOLUBILIS

Fès-Meknès, Morocco

Nestled between Fez and Rabat, the city of Volubilis was the ancient capital of the kingdom of Mauritania. Originally an Amazigh settlement, Volubilis fell under Roman rule and was expanded with many typically Roman features, including a temple, basilica and town houses. Today the ruins are a testament to the Romanisation of rural areas, and the effect on indigenous people. With its carved stonework, mosaic tiles and triumphant archways, Volubilis is one of the finest Roman sites in North Africa.

FORBIDDEN CITY

Beijing, China

For almost 500 years, the Forbidden City served as the home of the emperors of China. A complex of 980 buildings, it was a place of secrecy, power and eternal opulence. Today it is hailed as the largest collection of preserved ancient wooden structures on the globe and is surrounded by a ten-metre (32-feet) high wall with a unique, delicately crafted watchtower at every corner. With almost 10,000 rooms containing countless works of art, beautifully preserved furniture and priceless relics of the past, every inch of the Forbidden City is dripping in rich history and centuries of Chinese heritage.

PETRA

The land of Indiana Jones has much history to offer

Ma'an Governorate, Jordan

Carved into the red-rose rock, Petra is a vast, unique city that served as a key junction for Indian incense, Chinese silk and other trade between Arabia, Egypt and Syria-Phoenicia more than 2,000 years ago. The jewel in Jordan's crown, Petra is surrounded by sheer mountains, housing a labyrinth of passages and gorges. Petra's position as one of the 'New7Wonders' Seven Wonders of the World is well deserved. It houses hundreds of intricately cut rock tombs with elaborate carvings, a huge 3,000-capacity theatre and Al-Madhbah – a high religious place of sacrifice seated on the summit of Jabal al-Madhbah. Above, overlooking it all is Ad-Deir monastery, reached by ascending 800 steps cut into the rock. Exploring every inch of Petra will take days, but it is a simply awe-inspiring experience and true testament to the combined powers of nature and humans.

Take your time to explore all of Petra's wonders

ROCK-HEWN CHURCHES

● **Lalibela, Ethiopia**

Following the Siege of Jerusalem in 1187 by the forces of Saladin, Christian pilgrimages to the Holy Land had been thwarted for decades. Spotting an opportunity, King Lalibela (1181-1221) of the Zagwe dynasty ordered the construction of a New Jerusalem in the heart of Ethiopia. These grand, towering churches were chiselled from within the earth from the 'living rock' of monolithic blocks. The buildings were connected to catacombs and hermit caves by ceremonial passages that were decorated with interior murals, and benefitted from an extensive drainage system that linked all the buildings with water that filled the church wells. The project took 24 years to complete, with 11 monolithic mediaeval churches being created. One of them, Biete Medhane Alem, is said to be the largest of its kind in the world.

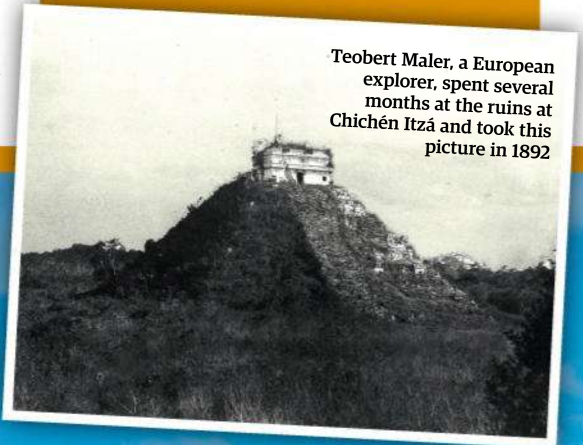
Today, ten of these churches stand in two main groups, in the north and east, while the 11th church, (Biete Ghiorgis, or Church of Saint George), the finest example and most preserved, stands isolated in the west. This unique site is said to have been carved by angels at night, but any visitor will be awed by the human-made details, mural paintings, intricate carvings and reliefs that survive inside these red stone structures.

CHICHÉN ITZÁ

A striking set of ruins harking back to a mysterious civilisation

● **Yucatán, Mexico**

Once the centre of the Maya Empire in Central America, the ruins of Chichén Itzá offer a unique and dazzling insight into a rich, diverse and often mystifying civilisation. Chichén Itzá is a huge archaeological complex, comprising towering pyramids, chilling temples and the largest ball court in America, where men literally played for their lives. The most iconic landmark of Chichén Itzá is undoubtedly the dazzling pyramid of El Castillo, standing a towering 24-metres (79-feet) high, with its 365 stone steps, one for each day of a solar year.



Teobert Maler, a European explorer, spent several months at the ruins at Chichén Itzá and took this picture in 1892

"The largest ball court in America, where men literally played for their lives"

© Alamy, Getty Images

JERUSALEM'S OLD CITY

Jerusalem, Israel

If there was ever a place in the world where visitors can not only observe history but feel fully immersed in it, Jerusalem's Old City is it. Surrounded by massive 16th-century Ottoman walls, the Old City is the beating heart of Jerusalem. The city is divided into four culturally unique areas – the Muslim Quarter, Jewish Quarter, Armenian Quarter and Christian Quarter. Although it has a history stretching back some 3,000 years, the Old City is not a monument, it is a living, breathing place inhabited to this day. A winding maze of narrow streets, ancient buildings and colourful markets – to walk the cobblestones is to take a journey through a city that has experienced war, loss, destruction but also hope and redemption on a monumental scale.

KNOSSOS

Heraklion, Greece

Five kilometres (three miles) from the Greek city of Heraklion is the archaeological site of Knossos, considered by some as the oldest city in Europe. The true age of the site is in some debate, but there is evidence humans have inhabited Knossos since the Neolithic times in 6000 BCE. A city steeped in myth and legend, the site has been ravaged and rebuilt over the centuries and served as the capital of Minoan Crete until abandoned in 1375 BCE. For years it was believed the city-state could be found only in fiction, until 1878 when it was discovered by Minos Kalokairinos. After extensive excavations and restorations, large parts of the palace and an elaborate maze emblazoned with wall paintings can now be explored.

SKELLIG MICHAEL

A breathtaking Medieval site with wildlife to match

Kerry, Ireland

Almost 12 kilometres (eight miles) west of County Kerry is a collection of sea crags and ancient rocks, 350 million years old, that rise out of the depths of the Atlantic Ocean. These spectacular pinnacles were the chosen retreat of a small group of monks who, between the 6th and 8th century, withdrew from civilisation to become closer to God. The monastery these early Christians established on the island, now known as Skellig Michael, has survived, and consists of six beehive cells, two oratories and a later Medieval church. Although extreme weather prompted the monks to abandon the island in the 12th or 13th century, it has remained a place of pilgrimage, and featured in the film *Star Wars: The Force Awakens*.

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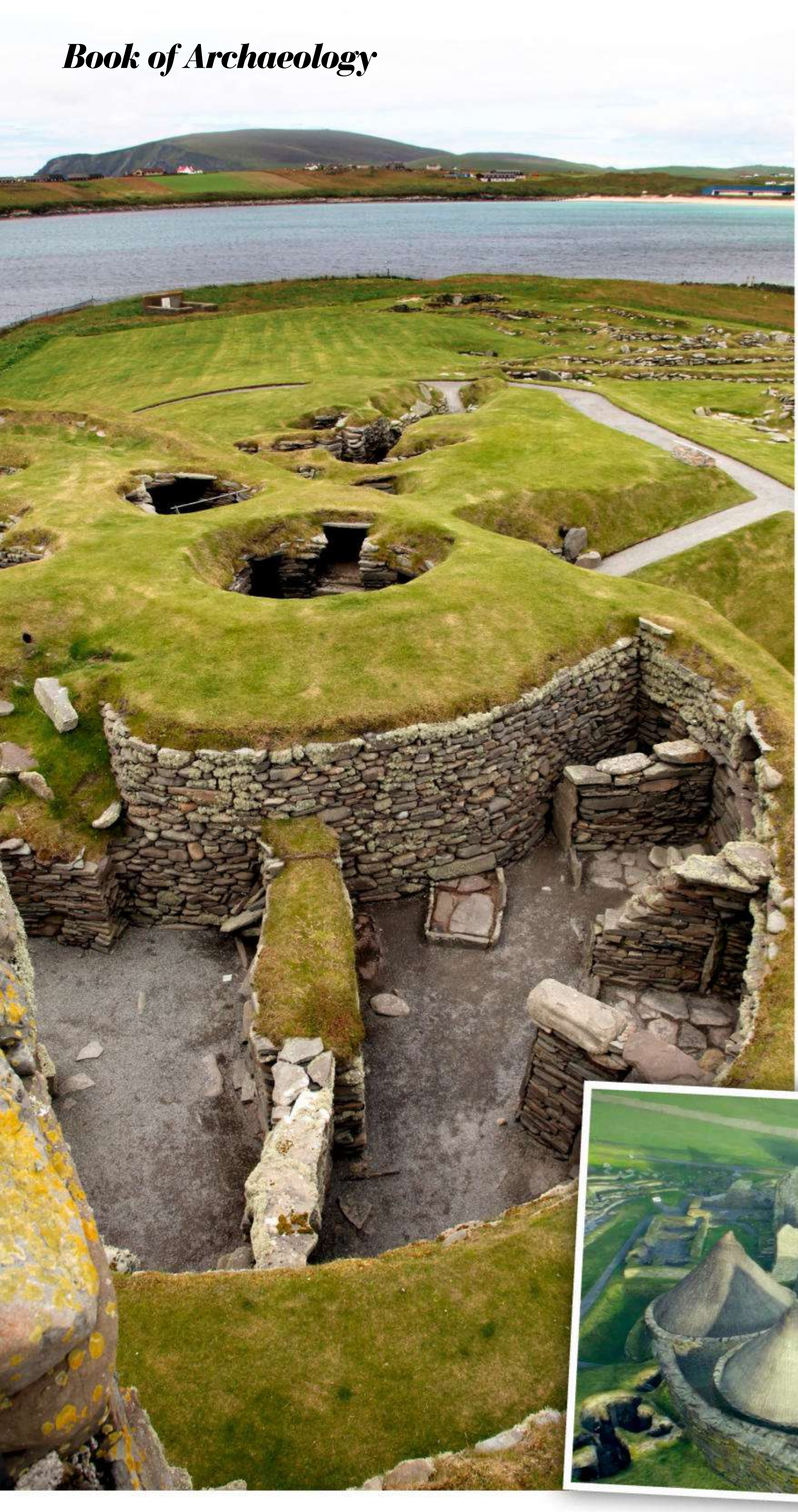
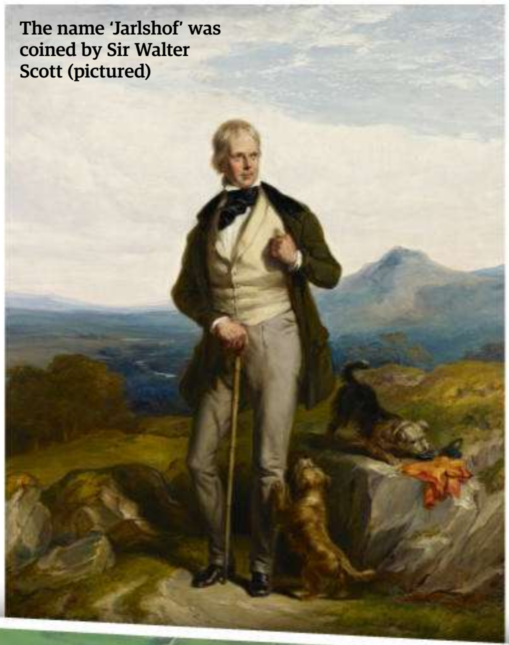


JARLSHOF

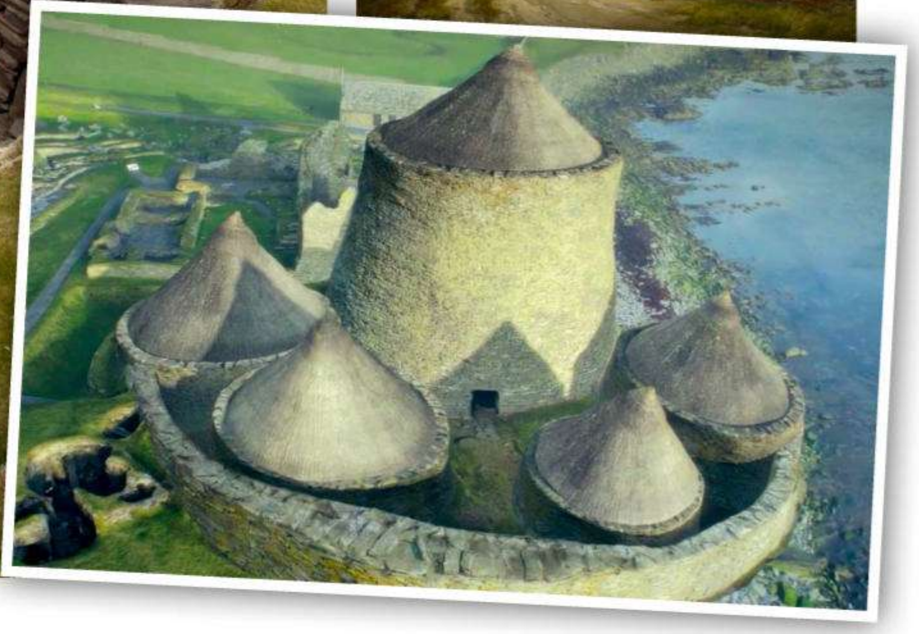
Beauty and the Bronze Age

● **Shetland Islands, Scotland**

Near the South Mainland of Shetland sits an archaeological site far more complete than its years would imply. Jarlshof, named by Sir Walter Scott and meaning 'earl's house', contains more than 4,000 years of human history in one place, and until a violent storm at the end of the 19th century exposed it, it was hidden. While wandering through this settlement, remains of late Neolithic houses can be seen, followed by Bronze Age dwellings with dark underground passages, which were used as grain and cold stores. Half of an Iron Age broch still remains – the other half lost to the sea – and one of the wheelhouses survives to this day. The ruins from the Viking age with its longhouse are the largest to be seen anywhere in Britain. There is even a Medieval farmhouse with barn and corn dryer.



The name 'Jarlshof' was coined by Sir Walter Scott (pictured)



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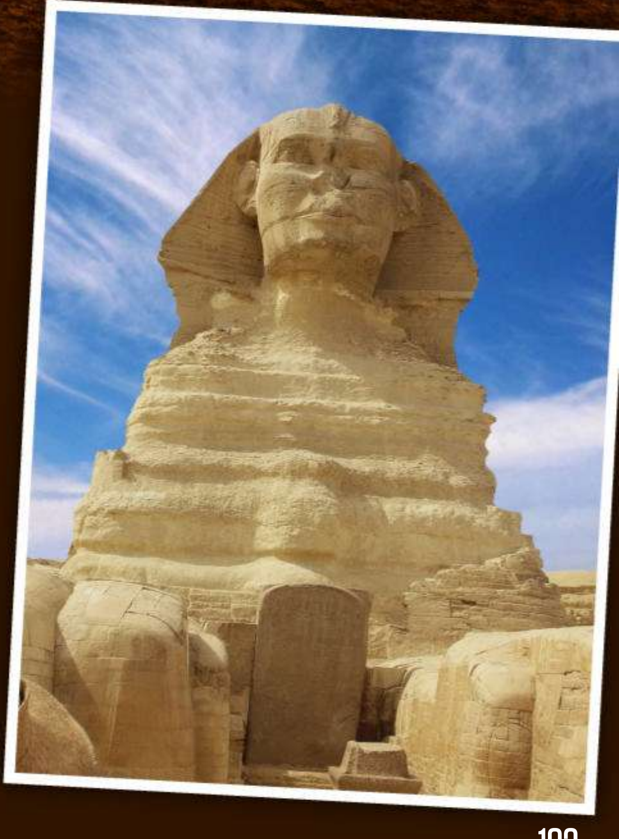
GIZA NECROPOLIS

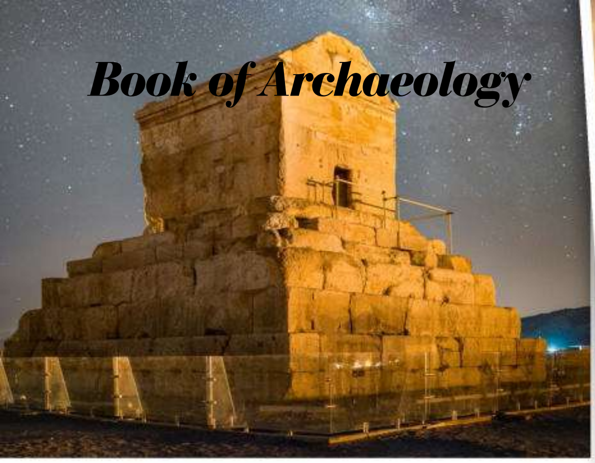
This monumental plateau contains some of the world's most renowned attractions

● **Giza, Egypt**

Home to not only the Fourth Dynasty Giza pyramid complex (dating back to between 2600 and 1500 BCE), but also the Great Sphinx, several smaller monuments, cemetaries and the remains of a workers' village, this desert plain is a UNESCO World Heritage Site and has been the focal point of numerous archaeological excavations since the 1800s.

The Pyramids of Giza are among the most iconic structures in the world, seen in countless photographs, documentaries and films, but nothing comes close to viewing them with your own eyes. These celebrated, towering resting places of god-kings are located west and south of the bustling metropolis of modern Cairo. Giza's Great Pyramid is perhaps the most famous, and the sheer cubic content of this mammoth structure is staggering, at roughly 2.6 million cubic metres (92 million cubic feet). However, the smaller pyramids of Chephren, Mycerinus and those in the eastern and western cemeteries are also essential visits. These ancient tombs are forever guarded and watched over by the spectre of the mysterious Great Sphinx, the world's oldest monumental sculpture (which numerous archaeologists postulate could predate its impressive neighbours), and an enduring testament to human artistic achievement.

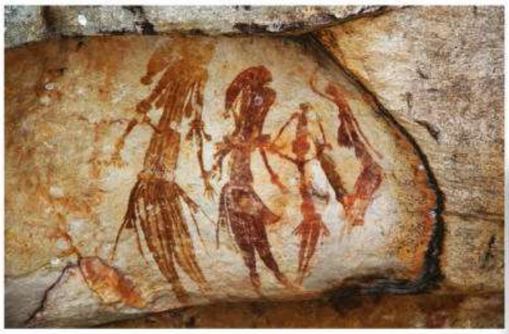




THE TOMB OF CYRUS THE GREAT

● **Pasargadae, Iran**

The tomb of Cyrus the Great is not the biggest or most opulent of the sites in this guide, but its historical importance has earned it a place on the list. Located in the former Persian capital of Pasargadae, this stone monument was built as the final resting place of the founder of the Achaemenid Empire in the summer of 530 BCE. The monument measures 13 x 12 metres (42 x 39 feet) and features a platform of stepped stone. Inside are two chambers: an attic and the tomb itself. Visitors to this famous monument will be keeping good company, as it was visited by Alexander the Great in 330 BCE.



BRADSHAW PAINTINGS

● **Kimberley, Australia**

In 1891, explorer Joseph Bradshaw was searching for suitable land for farming, instead he found ancient works of art tens of thousands of years old. The true age of these paintings is still in debate, but more have been discovered across the sandstone regions in West and Central Kimberley. The sketchy paintings typically depict human silhouettes in headdresses and tassels that appear to be running, hunting and dancing. These shadows of ancient civilisation give an insight into the lifestyles of some of the earliest humans. The rock art galleries are likely older than the art found in Egyptian temples, and to tour even a few of the 1,500-plus rock art sites is to take a journey to the furthest reaches of human history.

© Alamy, Getty Images

STONEHENGE

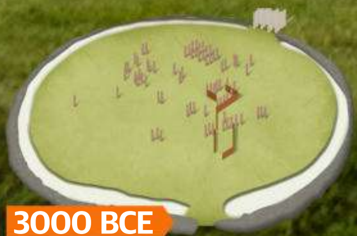
The stone circle continues to intrigue the world with all of its unanswered questions

● **Wiltshire, England**

This ancient stone monument has perplexed and inspired humans for generations, and Stonehenge is undoubtedly the most renowned stone circle on the planet. Believed to be an early human burial ground, archaeologists have estimated this prehistoric monument dates back to between 3000 and 2000 BCE, and was constructed over 1,500 years. Built on the axis of the midsummer sunrise, the bluestones that make up part of Stonehenge travelled a remarkable 380 kilometres (236 miles) from the Preseli Mountains in Wales to where they stand today. The effects of the strikes of axes and hammers can still be seen on these impressive stones, and the monument truly leaves an impression of the remarkable sophistication of our ancestors.

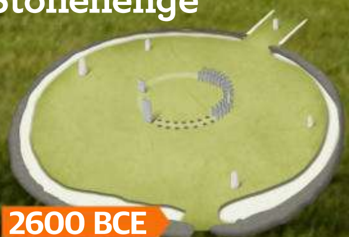
> "The effects of the strikes of axes and hammers can still be seen on these impressive stones"

The development of Stonehenge



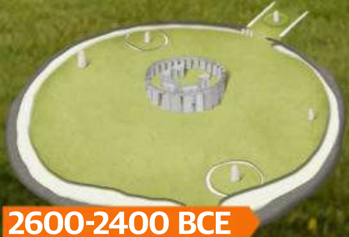
3000 BCE

Timber posts are erected at the centre of the site and north east entrance.



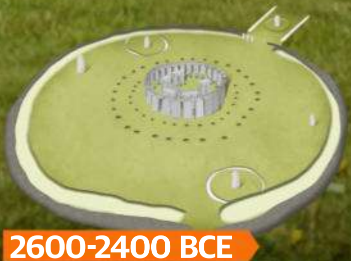
2600 BCE

Bluestones are added and arranged in a double ring, along with larger sarsens. The Avenue is also dug.



2600-2400 BCE

The iconic sarsen circle and horseshoe are created, in addition to small circular earthworks.



2600-2400 BCE

Bluestones are re-erected within the outer sarsen circle and pits are dug around the outside.

THE ACROPOLIS

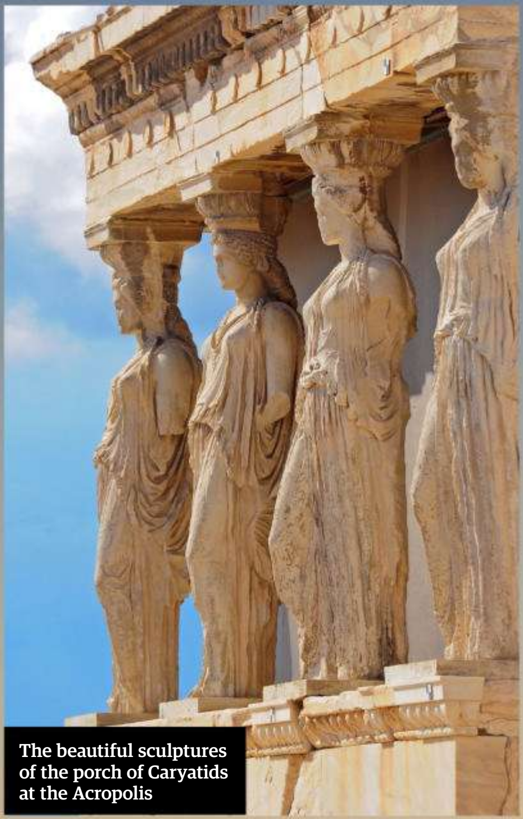
The iconic ruin perched on a hill

● **Athens, Greece**

In the latter half of the 5th century BCE, Pericles chose Athens to be the home of his vision of democracy, arts and philosophical thought. This dream took form on a rocky hill overlooking the city beneath, and today the remains of this monumental citadel can still be seen, explored and marvelled at. The buildings of the Acropolis are a testament to a world that birthed democracy, theatre and freedom of expression, and have survived almost 25 centuries of natural disasters, wars and an ever-changing world.

After ascending the stone steps of the Acropolis, the monumental gateway, the Propylaea, can be seen. This huge entrance is dedicated to Athena and is crafted from white marble and limestone. To the south is the tiny Temple of Athena Nike, where citizens worshipped the goddess and prayed for victory. The most iconic building of all can be found in the centre of the Acropolis - the Parthenon. This immense structure took nine years to build, with every single piece uniquely created and fitted together like a monumental jigsaw. There are many Acropolises in Greece, but there is a good reason why Athens' is known as the Acropolis, because the majesty and beauty of these unique antiquities are unmatched anywhere else in the world.

> "The buildings of the Acropolis are a testament to a world that birthed democracy"



The beautiful sculptures of the porch of Caryatids at the Acropolis

GGANTIJA TEMPLES

● **Gozo, Malta**

Older than the Giza Pyramids and Stonehenge, the temples of Ġgantija rank among the earliest freestanding buildings in the world. The two temples are said to have been built in tribute to the Great Earth Mother, a goddess of fertility, and became a place of prayer and pilgrimage for the ancient people of Gozo. These two temples represent the goddess of fertility for which they were built in their round, curved structure. Each temple contains five apses and are connected by a large forecourt, however, it is the smaller details that are most astonishing – the altars where animals were sacrificed, a stone hearth where fire burned and relief panels depicting trees, plants and animals.

MOHENJO-DARO

● **Sindh, Pakistan**

This brick metropolis is known as the "mound of the dead men". Located on the banks of the Indus River, Mohenjo-daro dates back to 2500 BCE and was one of the larger settlements of the ancient Harappan civilisation, which boasted a population of around 40,000. The city, which was uncovered in the early 1920s, was built using bricks made from mud. Its features included public baths, flushing toilets, cesspits, multiple-storey buildings and covered sewage systems. Having been heavily excavated, the Pakistan Archaeological Department has banned further excavation and sought help from UNESCO to conserve and restore this fascinating and forward-thinking city.

THE SACRED CITY OF CARAL-SUPE

● **Caral, Peru**

Caral-Supe is one of Peru's largest archaeological sites. Built approximately 4,700 years ago in the Supe Valley north of Lima, no other city has been found to have boasted the same diversity of buildings (including six, 21-metre (69-feet) tall pyramids, several plazas and areas of worship) or administrative and ceremonial functions before Caral. Once home to 3,000 people, the area is said to have been one of the very first regions in the world to develop a civilisation. Its people believed in the preservation of the environment and harmony of space, worshipping both the Moon and Sun, and their temples were designed to venerate their gods.

THE GREAT WALL OF CHINA

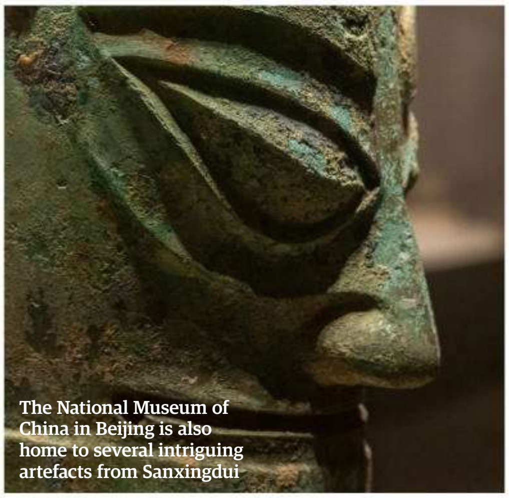
Discover the most ambitious military structure ever undertaken

Voted as one of the New Seven Wonders of the World, this is one trip that needs a spot on the bucket list for serious hikers and tourists alike

● **China, Mongolia**

Commissioned by Emperor Qin Shi Huang in the 3rd century BCE, the Great Wall of China was constructed with the intention of preventing invasion by barbarian nomads. Taking over two millennia to complete, it stretches for 21,196 kilometres (13,171 miles) across southern Mongolia and northern China. Consisting mainly of walls of earth and stone, this colossal defensive system also incorporates natural barriers including mountain ridges, rivers, moats and ditches. With fortifications ranging up to nine-metres (29-feet) high, the wall was also dotted with 37-metre (121-feet) ramparts and watch towers populated with guards tasked not only with defence, but also the regulation of both immigration and trade, making it an important transportation corridor.

The most well-known and best-preserved sections of the wall are those that were constructed during the Ming Dynasty (1368–1644 CE). Despite never being hugely effective at halting foreign raiders, and with much of its impressive bulwark now having disintegrated, it was awarded World Heritage Status in 1987. Such is its importance to China that sections of the wall are currently being reconstructed.



The National Museum of China in Beijing is also home to several intriguing artefacts from Sanxingdui

SANXINGDUI

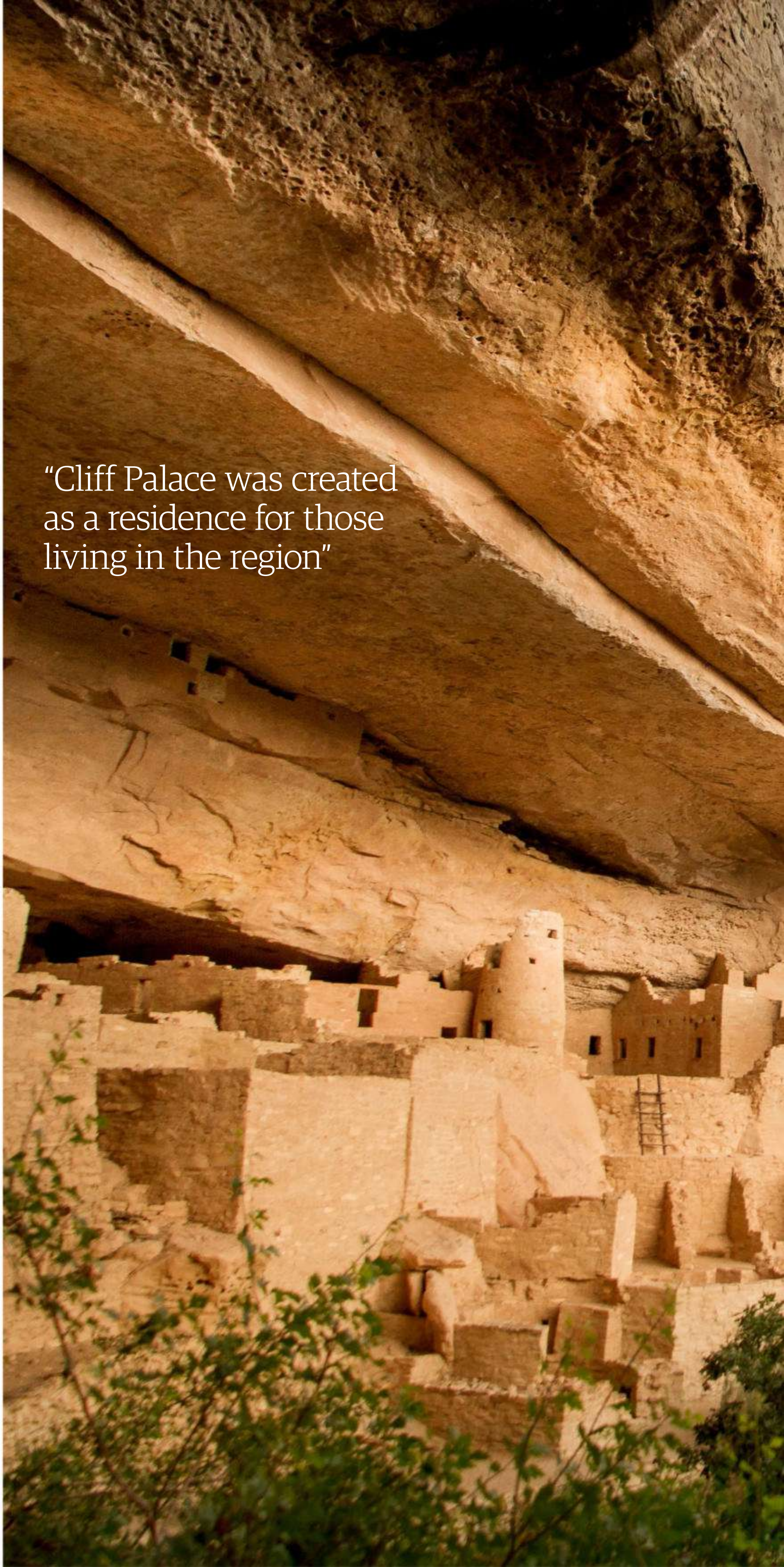
● **Sichuan province, China**

Located in the city of Guanghan, the Sanxingdui ruins lie on the bank of the Jianjiang River. Dating back 3,200 years, the site spans approximately 12 square kilometres (4.6 square miles). Despite having been discovered in 1929, it wasn't until the 1980s that two pits were uncovered crammed full of fascinating relics including gold masks, elephant tusks, bronze figures with large protruding eyes and even a 3.95-metre (13-feet) high tree said to have been worshipped as a ladder to heaven. Over 1,000 items were uncovered in total, many dating back 3,000 years. These priceless objects can be viewed at Sanxingdui Museum in Guanghan.

CARTHAGE

● **Tunisia**

At its zenith in the 4th century BCE, Carthage was the beating heart of an empire that encompassed vast swathes of the Mediterranean. Unfortunately, despite its rich culture, lucrative trade networks and impressive architecture, the city is predominantly remembered for its total annihilation at the hands of Rome in 146 BCE. As a result of its destruction, most of the ruins that remain in this UNESCO World Heritage Site are foundations. However, the Baths of Antoninus (the largest complex of its kind outside of Rome) are worth exploring, and a trek up Byrsa Hill will be rewarded with a sweeping view of the sea.



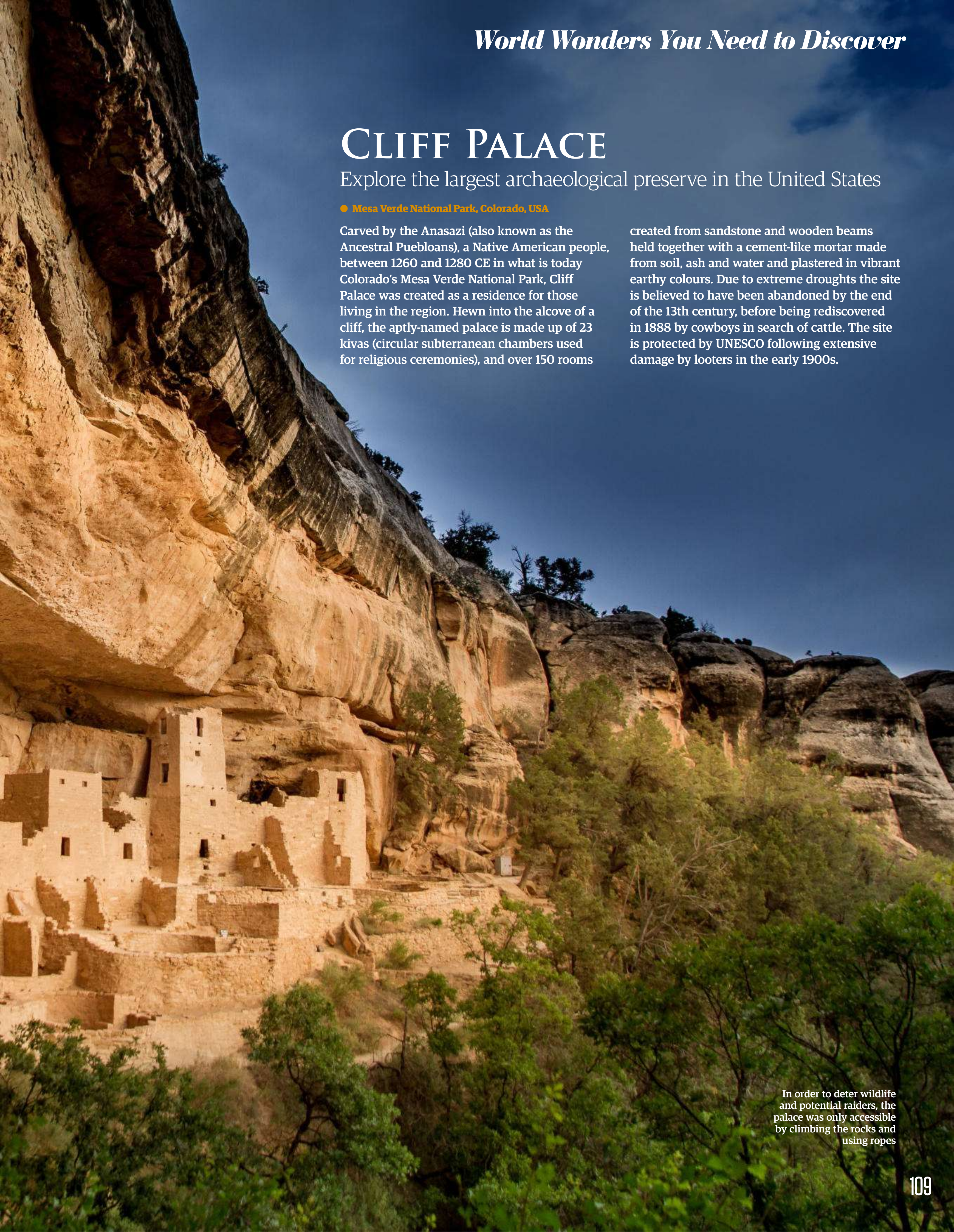
"Cliff Palace was created as a residence for those living in the region"

CLIFF PALACE

Explore the largest archaeological preserve in the United States

● **Mesa Verde National Park, Colorado, USA**

Carved by the Anasazi (also known as the Ancestral Puebloans), a Native American people, between 1260 and 1280 CE in what is today Colorado's Mesa Verde National Park, Cliff Palace was created as a residence for those living in the region. Hewn into the alcove of a cliff, the aptly-named palace is made up of 23 kivas (circular subterranean chambers used for religious ceremonies), and over 150 rooms created from sandstone and wooden beams held together with a cement-like mortar made from soil, ash and water and plastered in vibrant earthy colours. Due to extreme droughts the site is believed to have been abandoned by the end of the 13th century, before being rediscovered in 1888 by cowboys in search of cattle. The site is protected by UNESCO following extensive damage by looters in the early 1900s.

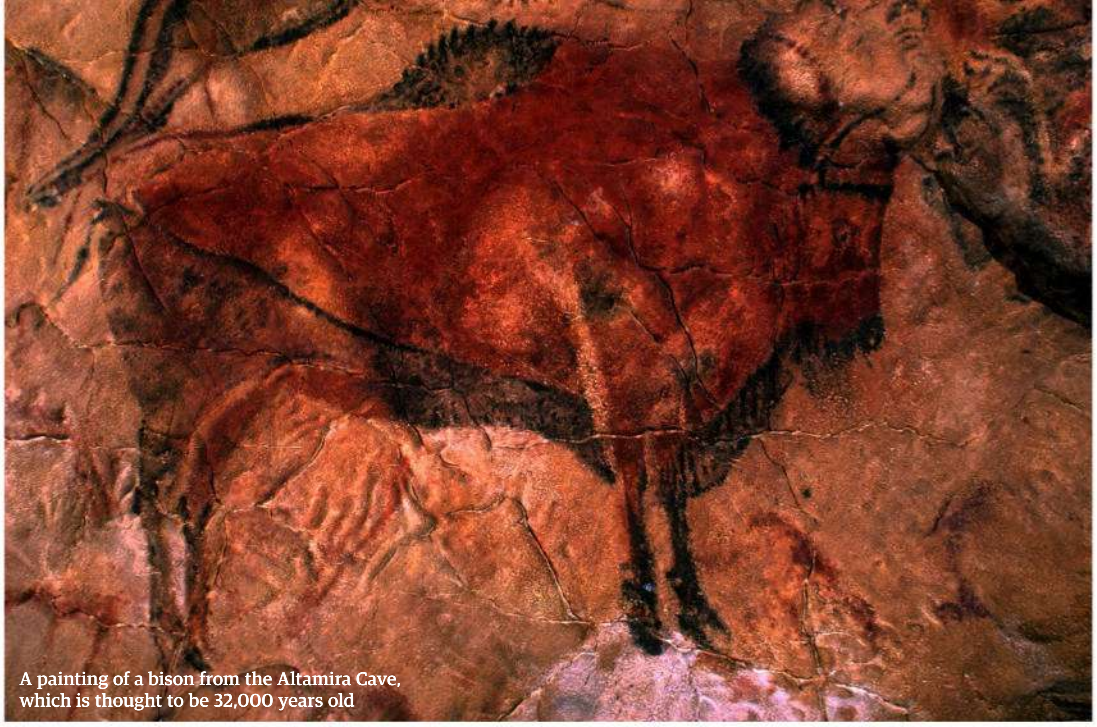


In order to deter wildlife and potential raiders, the palace was only accessible by climbing the rocks and using ropes

CAVE OF ALTAMIRA

● Santillana del Mar, Spain

One of the world's most impressive and breathtaking examples of Palaeolithic art lies in the Cave of Altamira in the Cantabria region of Spain. Initially discovered by a hunter in 1868, the cave was not explored until the 1870s with the first excavation beginning in 1879. The paintings on the walls and roof of the cave are remarkable in their colour and detail, and were initially believed to be forgeries by experts in Prehistory. However, they were later accepted as authentic, with the oldest thought to be 36,000 years old. Visitors used to be able to visit the cave, however conservation efforts to preserve the artwork have led to its closure.



A painting of a bison from the Altamira Cave, which is thought to be 32,000 years old

ALEXANDRIA

● Alexandria, Egypt

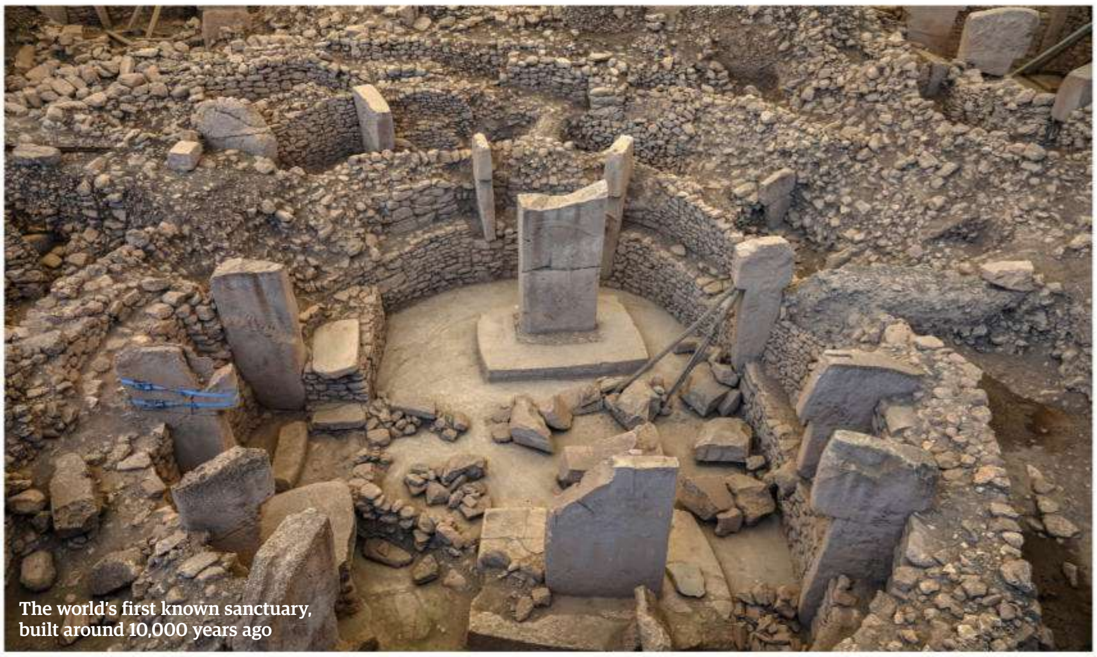
The ancient capital of Egypt, named after its founder Alexander the Great, Alexandria is rich in archaeological and historical ruins. Much of what remains of the old city, however, now lies underwater after an earthquake and tsunami in 365 CE resulted in its submersion. The remains of Alexandria's famous lighthouse, which was one of the Seven Wonders of the Ancient World, were discovered on the seabed in 1968. More remnants of the ancient city continue to be explored, with the location of Alexandria's infamous library and Alexander's tomb still undiscovered. On the land, however, Alexandria's Roman and Islamic history can be seen across various sites.

The Roman Amphitheatre in Alexandria

GOBEKLI TEPE

● Anatolia, Turkey

Dating to around 9,600-8,200 BCE, Göbekli Tepe is the world's oldest known ritual structure, predating even the invention of pottery. Located in the Germuş Mountains of southeastern Anatolia in Turkey, it is famous for its T-shaped standing stones. Although such pillars are not uncommon in this region, Göbekli Tepe's pillars are uniquely decorated, being carved with images of animals including snakes, mouflon (wild sheep), ducks and vultures, and some abstract shapes. The pillars themselves are thought to represent stylised humans, with the shaft being the body and the horizontal top the head, and some clothing and body parts are also represented. The site's varied iconography suggests it might have been used for the ritual practice of many different people, and its importance to the history of religion in the ancient world has led to it being made a UNESCO World Heritage Site.



The world's first known sanctuary, built around 10,000 years ago

EASTER ISLAND

This remote volcanic island is famous for its iconic Moai heads

● **Rapa Nui, Polynesia**

Dutch explorer Jacob Roggeveen stumbled across a mysterious island by accident on Easter Sunday in 1722, when he was on a voyage to discover the hypothetical continent of Terra Australis. As a result of the date, he christened the place Easter Island, though residents of the island refer to their home as Rapa Nui. The huge stone statues, known as 'Moai', that make Easter Island so memorable were carved between the 12th and 17th centuries by the island's original Polynesian inhabitants. With some Moai reaching nine metres (30 feet) and weighing 80 tons, the roughly 900 still standing were constructed out of volcanic tuff.

The Moai heads of Easter Island

COLOSSEUM

The home of the gladiators remains a must-visit tourist attraction

● **Rome, Italy**

Standing in the centre of Rome is the most iconic structure of the Ancient Roman Empire. The building of the Colosseum was commissioned by Emperor Vespasian in 72 CE and opened to the public as an entertainment arena in 80 CE. The structure hosted gladiator and animal fights from its opening to around the 5th century, and from then on served at various times as a church and a fortress. The Colosseum's stone was quarried by builders through the centuries, and earthquakes helped contribute to the deterioration of the structure. Now, the remains of the structure are preserved for visitors to experience.

OLDUVAI GORGE

The Great Rift Valley, Tanzania

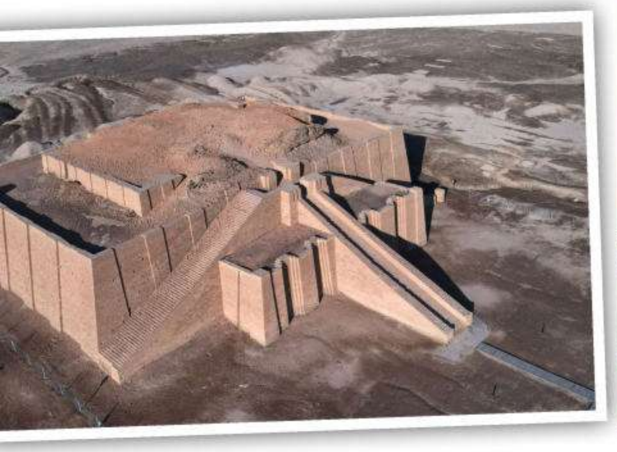
Olduvai Gorge, a ravine in the Great Rift Valley in northern Tanzania, is one of, if not the most important site for our understanding of early human development and technology. The gorge is around 90-metres (295-feet) deep, and the deposits that have been excavated, most notably by the famous palaeoanthropologists Mary and Louis Leakey, represent 2 million years of human evolution, yielding the fossilised remains of over 60 hominins. In addition to the hominin remains, the site has produced the world's earliest worked stone tools, known as Oldowan tools after the name of their place of discovery.

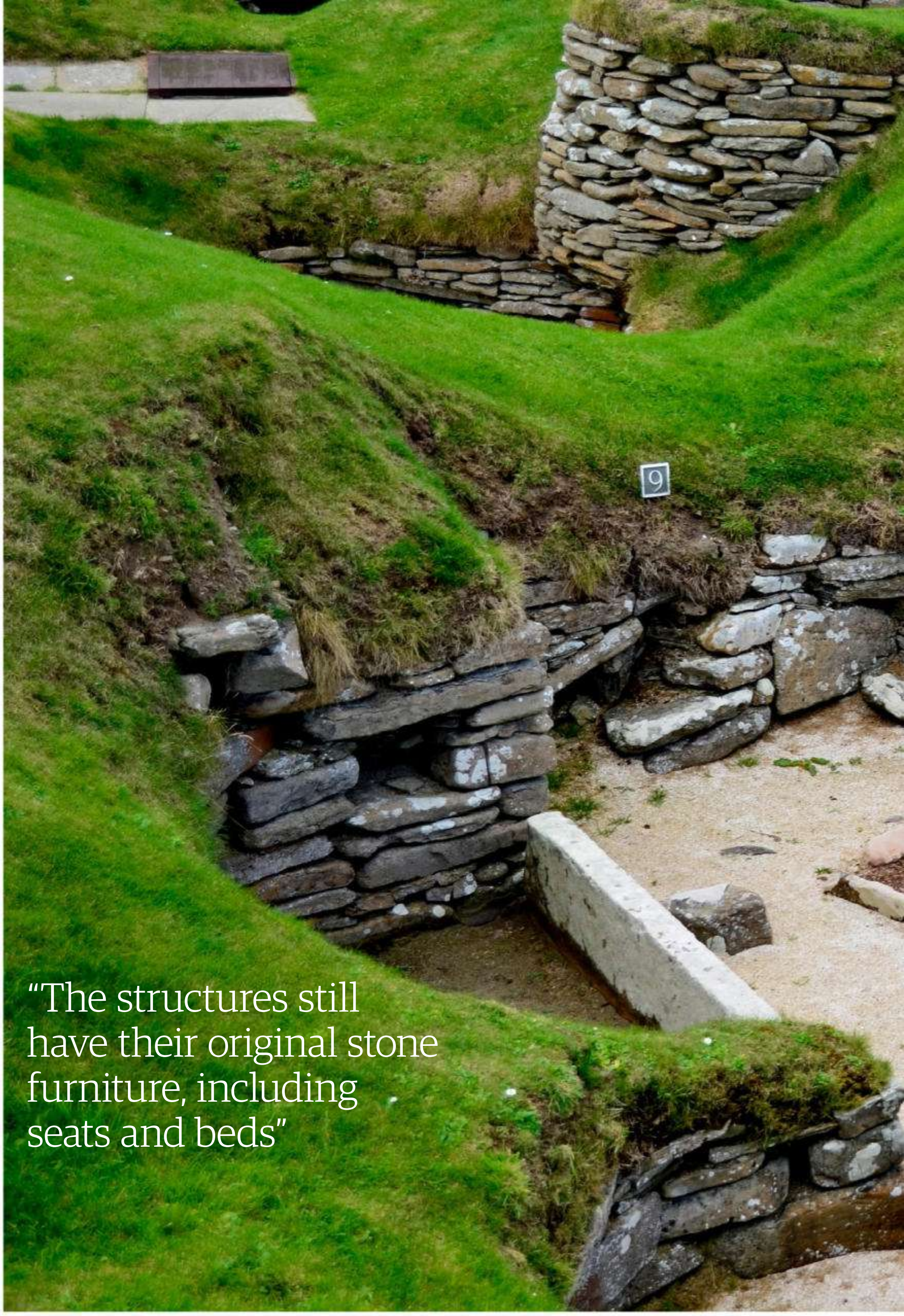
The sediments of Olduvai Gorge that held the secrets of the evolution of humanity

ZIGGURAT OF UR

Tell el-Muqayyar, Iraq

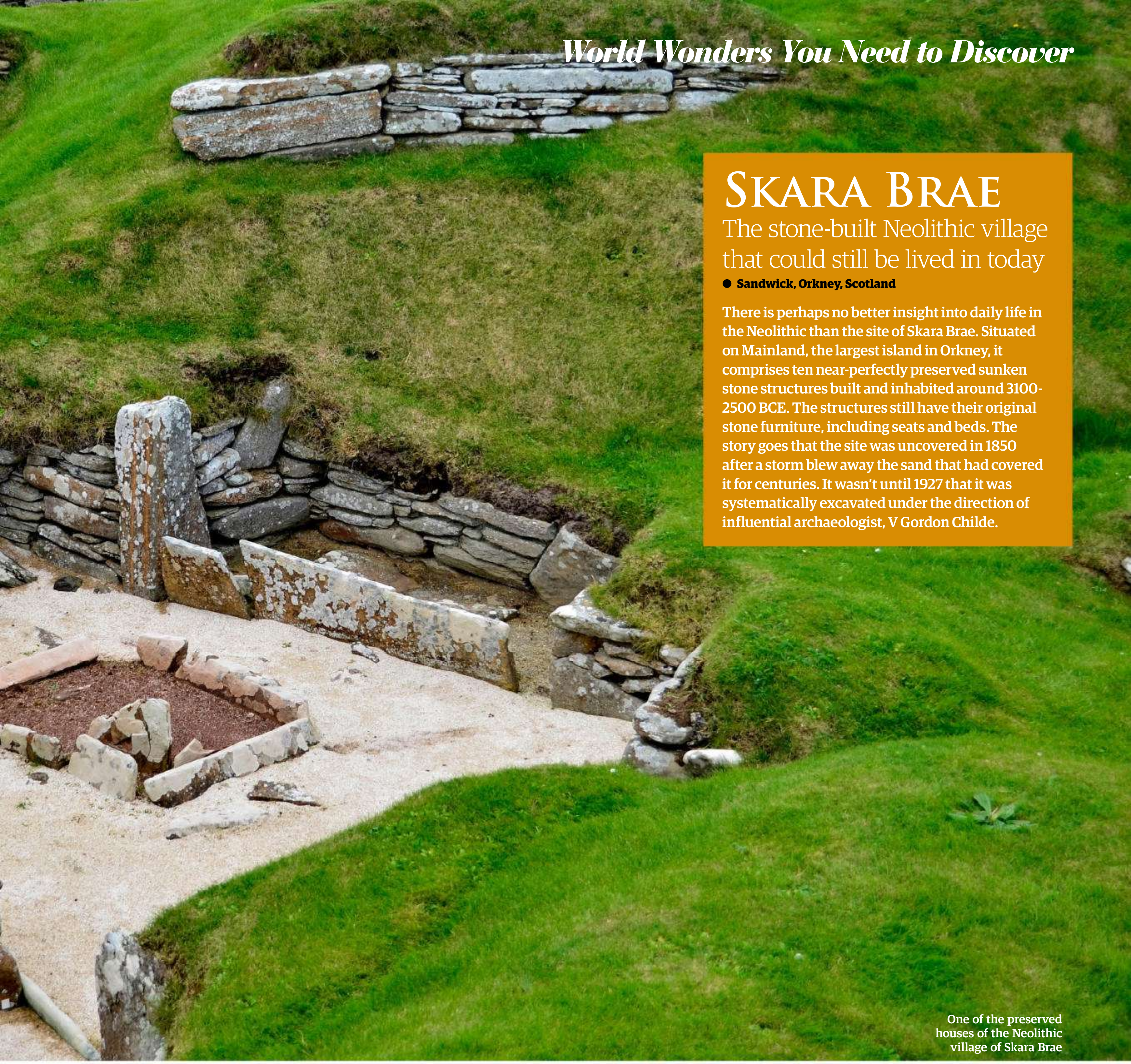
Ziggurats, which are stepped, flat-topped pyramids with temples at the top, were some of the most imposing sights in the ancient world. They were built throughout the Mesopotamian world, with the Ziggurat of Ur in Iraq the best-preserved example. In 2100 BCE, King Ur-Nammu laid the first brick of the monument, which consists of an interior of mud brick with sun-baked bricks on the outside. The three-tiered temple was in ruin by the 6th century BCE, when King Nabonidus of Babylon rebuilt it as a grander seven-tiered version. It was this that was excavated by Leonard Woolley in the 1920s and 30s and later reconstructed to something like its original glory in the 1980s.





> "The structures still have their original stone furniture, including seats and beds"

The famous Neolithic burial mound of Newgrange in the Brú na Bóinne landscape



SKARA BRAE

The stone-built Neolithic village that could still be lived in today

● **Sandwick, Orkney, Scotland**

There is perhaps no better insight into daily life in the Neolithic than the site of Skara Brae. Situated on Mainland, the largest island in Orkney, it comprises ten near-perfectly preserved sunken stone structures built and inhabited around 3100-2500 BCE. The structures still have their original stone furniture, including seats and beds. The story goes that the site was uncovered in 1850 after a storm blew away the sand that had covered it for centuries. It wasn't until 1927 that it was systematically excavated under the direction of influential archaeologist, V Gordon Childe.

One of the preserved houses of the Neolithic village of Skara Brae

NEWGRANGE

The ancient burial mound where art, architecture and astronomy meet

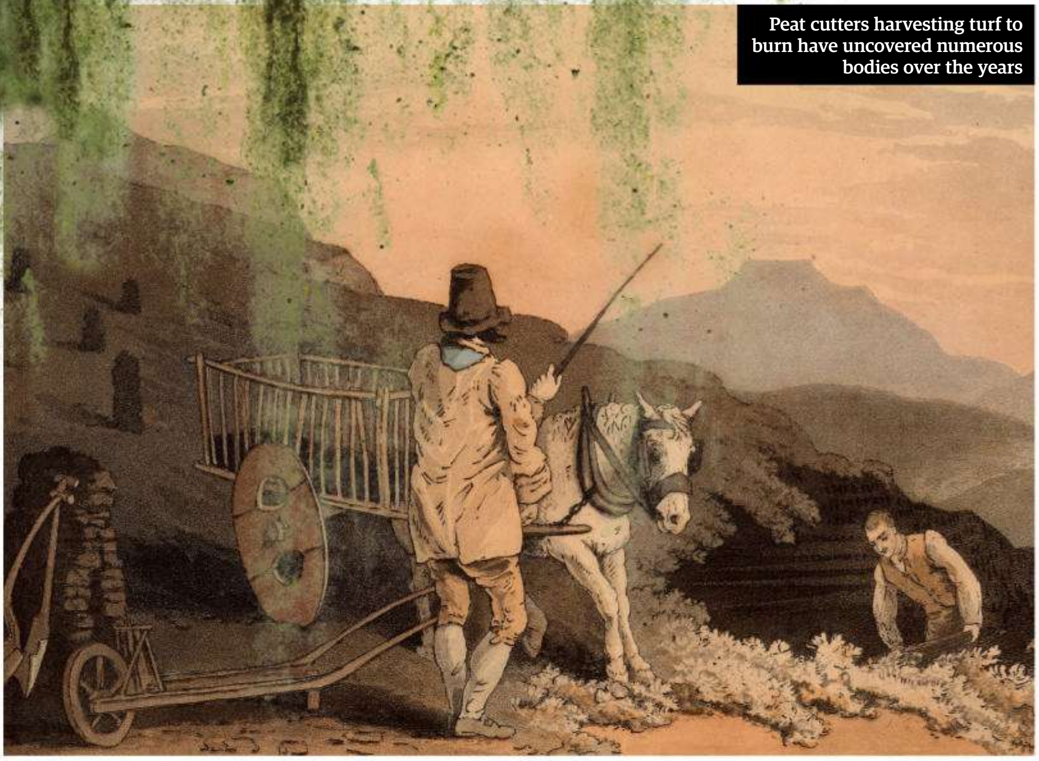
● **County Meath, Ireland**

Newgrange is one of three Neolithic passage graves in the landscape of Brú na Bóinne, County Meath, Ireland. It is one of the largest and grandest Neolithic burial monuments in the world, built around 3200 BCE. The monument consists of cobble-built chambers and cairns overlaid with a large earthen mound. Although it is a burial monument, it would have served as a central point for the community of the region, where people came to meet, mourn and perform ceremonies. It was built in such a way that during the winter solstice, sunshine streams directly into the chamber. It also boasts Europe's most important concentration of prehistoric megalithic art.

Secrets of the BOG PEOPLE

MEET THE MYSTERIOUS IRON AGE MUMMIES BURIED IN NORTHWEST EUROPE'S SWAMPS

Written by Jerry Glover



Peat cutters harvesting turf to burn have uncovered numerous bodies over the years

The Iron Age bog bodies of northwest Europe are some of the best naturally preserved human remains from the ancient past. While their skin looks like tanned leather and their bodies are seemingly deflated, they are pretty similar to you or me, which is astonishing considering many of them are at least 2,000 years old.

Hundreds of these mummies have been found in the peat bogs of England, Ireland, the Netherlands, Denmark and northern Germany. While sometimes only heads and arms are uncovered, the complete cadavers that have been unearthed often bear traces of terrible violence.

Occasionally hanged or stabbed or with their throats and stomachs slashed open, the shocking ways in which these people died both repels and fascinates. One of history's most profound murder mysteries, no contemporary writing can tell us for sure why they were killed or buried in violation of the normal death rites. But evidence increasingly suggests they were key players in human sacrifices.

All of the bodies were interred in peat bogs, which form in low-lying ground where moss gathers. The small amount of oxygen prevents bacteria from breaking down the dead vegetation each year. The resulting peat increases at a rate of just one metre every 1,000 years, creating a cocktail of chemicals – humic acid – that is able to preserve soft material and bones, tanning skin like leather.

The earliest record of a bog body find comes from Shalkholz Fen in Germany in 1640. We don't know what people thought of the mummies when they were first discovered but it was claimed that one found at Haraldskær in Jutland was the lost remains of Queen Gunnhild in 1835. According to Icelandic sagas, she was a cunning witch who was lured to the bog and drowned by King Harald Bluetooth in the 10th century.

We now know that Haraldskær Woman is actually 1,500 years old, so she can't be Gunnhild. Her proximity to Bluetooth's royal residence at Jelling may have caused her misidentification. Cases of mistaken identity have happened elsewhere. The finding of a preserved Iron Age woman's head in Lindow Moss, England, in 1983 caused a local man to confess to the murder and disposal of his wife in the same bog – a mistake that led to his conviction.

Research into Denmark's bogs began in 1859 when Conrad Engelhardt investigated Nydam Mose in Jutland, finding iron weapons and an oak boat. They have now yielded over 500 Iron Age bodies from between 400 BCE and 400 CE.

For his astonishing preservation and calm appearance, the most celebrated of these is the man who was found in Jutland's Tollund Fen in 1950. He lay on his side as if sleeping, his only attire a pointed skin cap, fastened under the chin by a hide string, and a hide belt around his waist. A rope of two twisted leather strings encircled his neck, drawn tight to cause lacerations, then it coiled across the shoulder and down his back. A few days of stubble covered his chin and upper lip but otherwise he was clean-shaven.

Danish police took a fingerprint analysis from his right thumb and found that it was indistinguishable from that of a living person, a result of him being buried in the bog when the water was cold. If it had been more than 4°C, the soft body parts would have begun to decompose before the humic acid could entirely infuse the corpse, arresting the decay.

Tollund Man's excellent decomposition was due to a large amount of collagen fibres that were tanned by the moss in his dermis (inner) skin layer, as well as the keratin of his hair, fingers and toenails. The tanning effect also preserved the lacerations made by the noose and his wounds. Likewise, his brain was remarkably well preserved and his teeth were intact.

Like most other Danish bog bodies, Tollund Man lived and died around the midpoint of the period when ironwork emerged in northwest Europe, between 500 BCE and 200 CE. Anaerobic bacteria, which don't need oxygen, concentrate iron deposits around bogs, leaving behind oily springs to show these iron 'bog ore' deposits.

After about 500 BCE, the peoples inhabiting northwest Europe began to source and work this ore, needing about four football-sized lumps to make just one axe head. Since iron is easier to source than the tin and copper that make up bronze, and is more durable, its discovery transformed lives and social orders across Europe. The bogs that made this possible with peat and iron ore were therefore considered to be special and sacred places, and Tollund Man's area was rich in the stuff.

In the age of the bog people, the dead were often burnt on a pyre. Afterwards, their bones were gathered up, put in urns or wrapped in cloth and often buried under a mound with a few goods.

"No contemporary writing can tell us for sure why they were killed and buried"

Peat bogs have preserved the bodies due to a cocktail of chemicals

To some cultures, cremation was bound with the belief that fire helped the body give up the soul so it could travel to the land of the dead to be reborn. Contrast this with the burials of the mummies, who were left in places where their remains were suspended with their souls unable to leave, and it suggests their deaths served a different purpose.

Before dying, the victims all received a last meal. Tollund Man and Grauballe Man enjoyed a grainy gruel, and the latter's contained a hallucinogenic fungus. He was killed when his throat was neatly sliced, from ear to ear.

The lack of fruits and vegetables shows that these men died in winter or early spring, possibly during the midwinter celebrations, a time connected to sacrifice. Perhaps their villages were on the edge of famine and the men were gifts for the gods in hope of a more successful harvest.

Little gold figures found in Danish bogs depict naked figures with belts and neck nooses, just like Tollund Man. The Oseberg Tapestry and picture stones, both dating from 700 to 900 CE, also show hangings as offerings to Odin, the god who had hanged himself to gain power. Several centuries separate these Viking-age artefacts from the bog bodies but even so, they indicate how the mummies may have been sacrificed as part of a cultic ceremony where hanging and strangulation were often used.

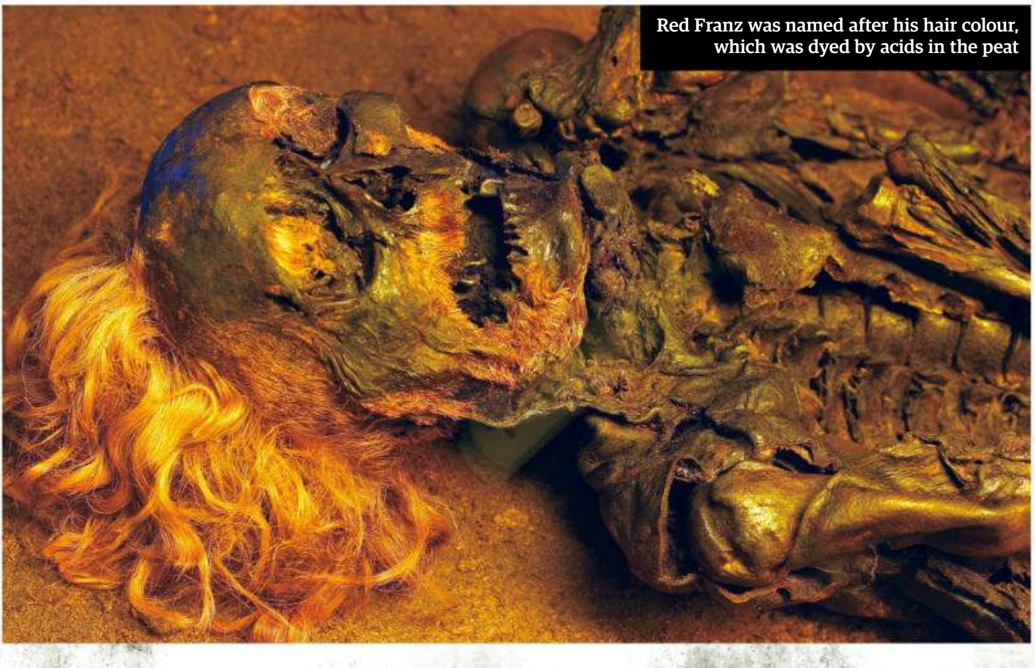
"Both were killed, mutilated and deposited in bogs near hills where kings were invested"

Before becoming Britain's best-preserved bog body, Lindow Man ate a cooked mixed grain cake called bannock. Some of it was burnt, possibly singling him out for death. He also ate mistletoe, prized by the Druids as a powerful medicine. From other clues such as the fox fur around his arm and his well-kept fingernails, it has been speculated that he was an aristocrat or even a Druid priest-in-training.

His unusual death – his remains show signs of bludgeoning, garrotting and strangling – and the year of around 60 CE make it possible that he was ritually sacrificed as a last resort against the Roman advance. General Gaius Suetonius Paulinus was marching towards the island of Anglesey, a Druid stronghold, and the bog man's location was en route. Moreover, his death also coincided with Boudicca's rebellion against the Romans.

The Gundestrup Cauldron from Jutland. It was probably reserved for important rituals and reveals connections between communities that were thousands of miles apart

A Danish Iron Age longhouse like the Tollund Man would have lived in


Red Franz was named after his hair colour, which was dyed by acids in the peat

The manner of Lindow Man's death is echoed by Worsley Man, found in the outskirts of Manchester, who was buried around 100 CE. The idea of them being sacrificed to avert Roman conquest is refuted by experts who see them as murder victims. But if Lindow Man was murdered, why was he naked and in such a remote place? Similarly, if Tollund Man was hanged as a criminal, why was he so carefully buried?

The high status of some of these bog people can also be seen in Ireland. For instance, Old Croghan Man from County Offaly was tall and enjoyed a meat-rich diet and manicures. In County Meath, meanwhile, Clonycavan Man's hair was styled with an expensive gel made from plant oil and pine resin, likely imported from France or Spain. Both were killed, mutilated and deposited in bogs near hills where kings were invested or at the intersections of tribal boundaries.

Irish legends add to the idea that these two men were kings who were sacrificed to ensure the fertility of their lands in hard times. The 4,000-year-old Cashel Man from County Laois, pinned in the bog with stakes, attests to a very ancient Irish tradition of ritual killing.

Dyed woollen clothes, amber beads and a bone comb testify to the wealth of Denmark's Huldremose Woman, who met her violent end in approximately 150 CE. Recent analysis of her garments revealed their exotic foreign origin, which probably meant she had either traded or travelled abroad for them. Alternatively, she may possibly have emigrated to Denmark.

Similar unusual connections came from a study of Haraldskær Woman in 2014, kindling the idea that these women were considered to be special because of their outsider status and they were thus more efficacious as sacrifices. This theory argues that they were shamanic wisewomen who went willingly as gifts to the marsh goddess, blessing their communities with their own special sacrificial value as a result. It also possible that they were despised foreigners or prisoners of war.

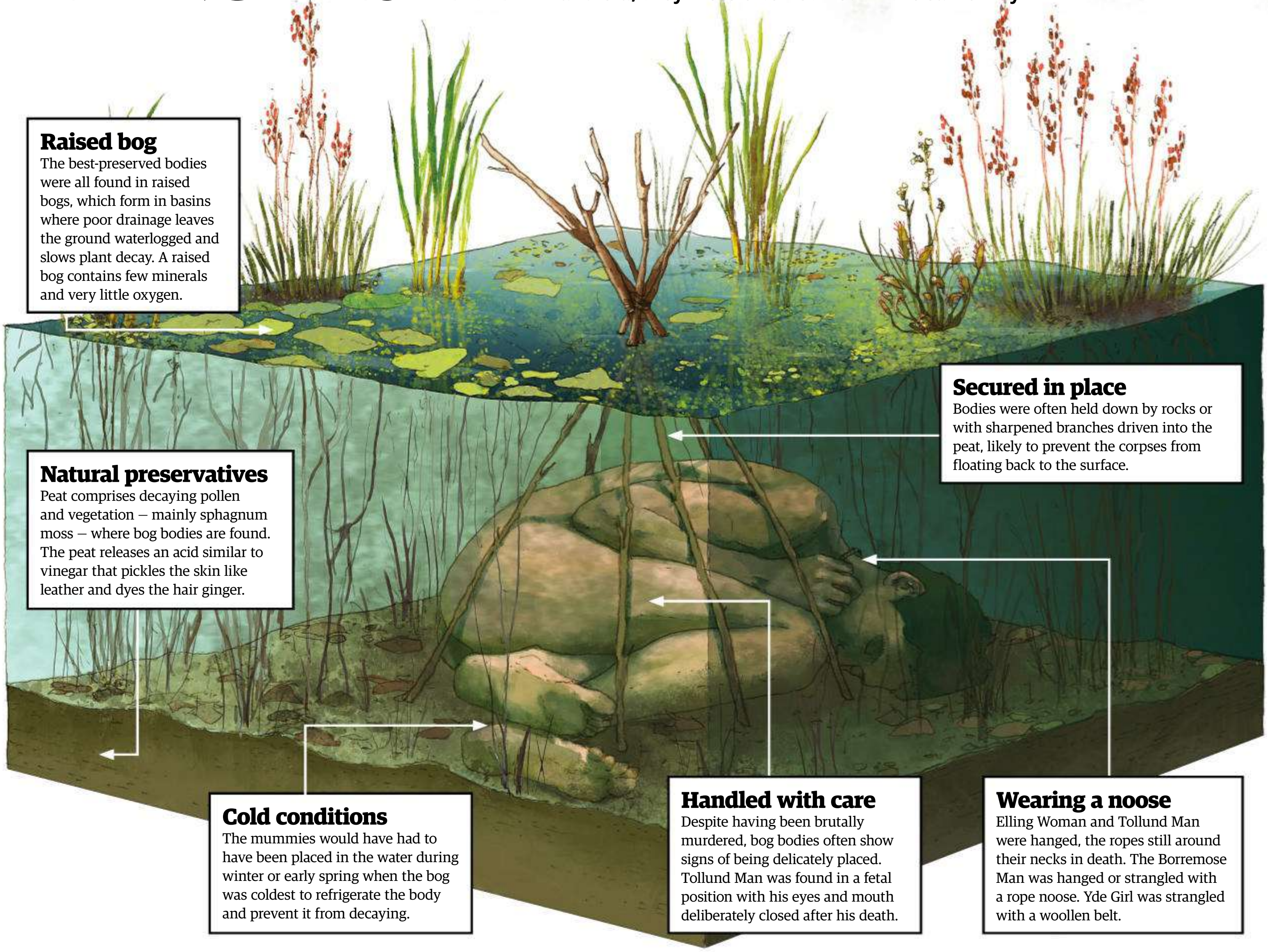
According to Tacitus, a Roman historian, Germanic tribes punished cowards and the "disreputable of body" by drowning them in marshes under wattled hurdles, which may have been what happened to Haraldskær Woman. This also occurred in Ireland and northern Germany.

Since these tribes didn't write about themselves, Tacitus is one of our best sources about them, although his records relied on second-hand sources regarding their customs as he never visited them himself. His accounts also serve to justify the subjugation of the 'barbarians' at the fringes of the Roman Empire.

In the most significant weather event since the Ice Age, Europe became dramatically colder and wetter after about 750 BCE. The resulting bad

MAKING A MUMMY

Though the bog bodies varied by country, culture and era, they were often buried in the same way



Raised bog
The best-preserved bodies were all found in raised bogs, which form in basins where poor drainage leaves the ground waterlogged and slows plant decay. A raised bog contains few minerals and very little oxygen.

Natural preservatives
Peat comprises decaying pollen and vegetation – mainly sphagnum moss – where bog bodies are found. The peat releases an acid similar to vinegar that pickles the skin like leather and dyes the hair ginger.

Secured in place
Bodies were often held down by rocks or with sharpened branches driven into the peat, likely to prevent the corpses from floating back to the surface.

Cold conditions
The mummies would have had to have been placed in the water during winter or early spring when the bog was coldest to refrigerate the body and prevent it from decaying.

Handled with care
Despite having been brutally murdered, bog bodies often show signs of being delicately placed. Tollund Man was found in a fetal position with his eyes and mouth deliberately closed after his death.

Wearing a noose
Elling Woman and Tollund Man were hanged, the ropes still around their necks in death. The Borremose Man was hanged or strangled with a rope noose. Yde Girl was strangled with a woollen belt.

Röst Girl, possibly the youngest bog body ever found

harvests produced may have stoked a widespread feeling that the angry gods had to be placated by human sacrifices.

So-called 'water cults' saw a revival in western Europe, with offerings of weapons starting at lakes and rivers - perhaps these included humans when people were really desperate. Just how many of these killings were happening? Since water doesn't preserve skin and bone, we can only ever know the bog sacrifices and further clues exist to signify the importance of making offerings to watery places.

The rarest and most prestigious of bog depositions in Denmark's pre-Roman Iron Age coinciding with the bog bodies are bronze and silver cauldrons, a number of which have been discovered. The finest is the Gundestrup Cauldron, which may have originated as far away as the Balkans before it was dismantled and interred in the Danish bog around 100 BCE, close to the sites of three bog bodies. On 13 silver plates, it depicts the mysteries of the mummies' religion, either the male or female pantheon of deities, or possibly religious officials such as Druids or shamans.

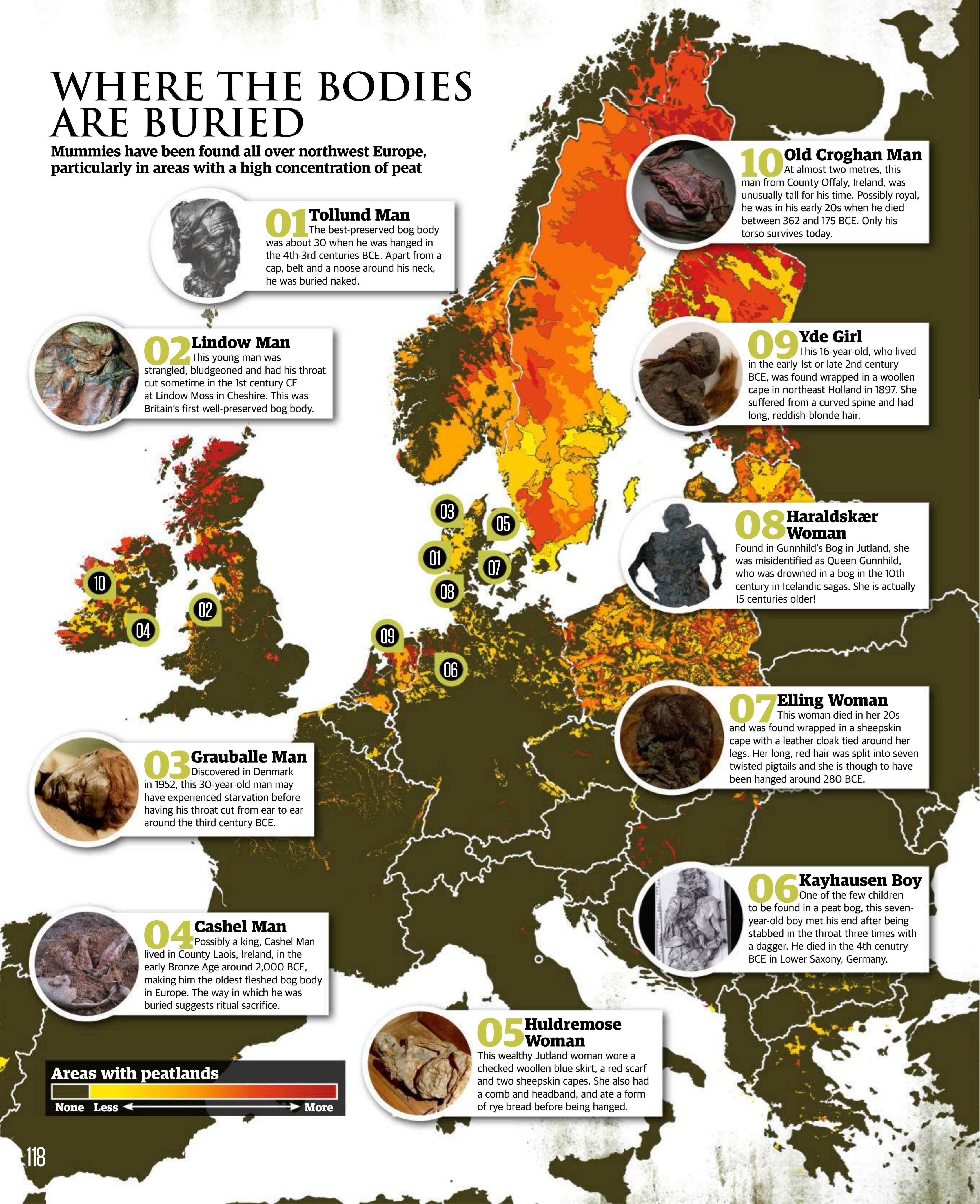
One plate shows a large figure plunging warriors into a kind of cauldron, while 'reborn' warriors on horses ride away in a procession. Another panel shows a cross-legged horned figure holding a torc and a snake – a shamanic god among animals.

In Celtic mythology, the origins of cauldrons are always mysterious. As a symbol of rebirth, the cauldron is part of other Indo-European traditions and it foreshadows the symbol of the Holy Grail, while its iconography shares motifs with ancient art from the Near East and even India with its cross-legged shaman.

Most scholars believe that the cauldrons were votive offerings to the indigenous gods, perhaps because the earlier human sacrifices were not propitious enough for them and the deities required more precious gifts. The more valuable

WHERE THE BODIES ARE BURIED

Mummies have been found all over northwest Europe, particularly in areas with a high concentration of peat



01 Tollund Man

The best-preserved bog body was about 30 when he was hanged in the 4th-3rd centuries BCE. Apart from a cap, belt and a noose around his neck, he was buried naked.

02 Lindow Man

This young man was strangled, bludgeoned and had his throat cut sometime in the 1st century CE at Lindow Moss in Cheshire. This was Britain's first well-preserved bog body.

03 Grauballe Man

Discovered in Denmark in 1952, this 30-year-old man may have experienced starvation before having his throat cut from ear to ear around the third century BCE.

04 Cashel Man

Possibly a king, Cashel Man lived in County Laois, Ireland, in the early Bronze Age around 2,000 BCE, making him the oldest fleshed bog body in Europe. The way in which he was buried suggests ritual sacrifice.

05 Huldremose Woman

This wealthy Jutland woman wore a checked woollen blue skirt, a red scarf and two sheepskin capes. She also had a comb and headband, and ate a form of rye bread before being hanged.

06 Kayhausen Boy

One of the few children to be found in a peat bog, this seven-year-old boy met his end after being stabbed in the throat three times with a dagger. He died in the 4th cenutry BCE in Lower Saxony, Germany.

07 Elling Woman

This woman died in her 20s and was found wrapped in a sheepskin cape with a leather cloak tied around her legs. Her long, red hair was split into seven twisted pigtails and she is though to have been hanged around 280 BCE.

08 Haraldskær Woman

Found in Gunnhild's Bog in Jutland, she was misidentified as Queen Gunnhild, who was drowned in a bog in the 10th century in Icelandic sagas. She is actually 15 centuries older!

09 Yde Girl

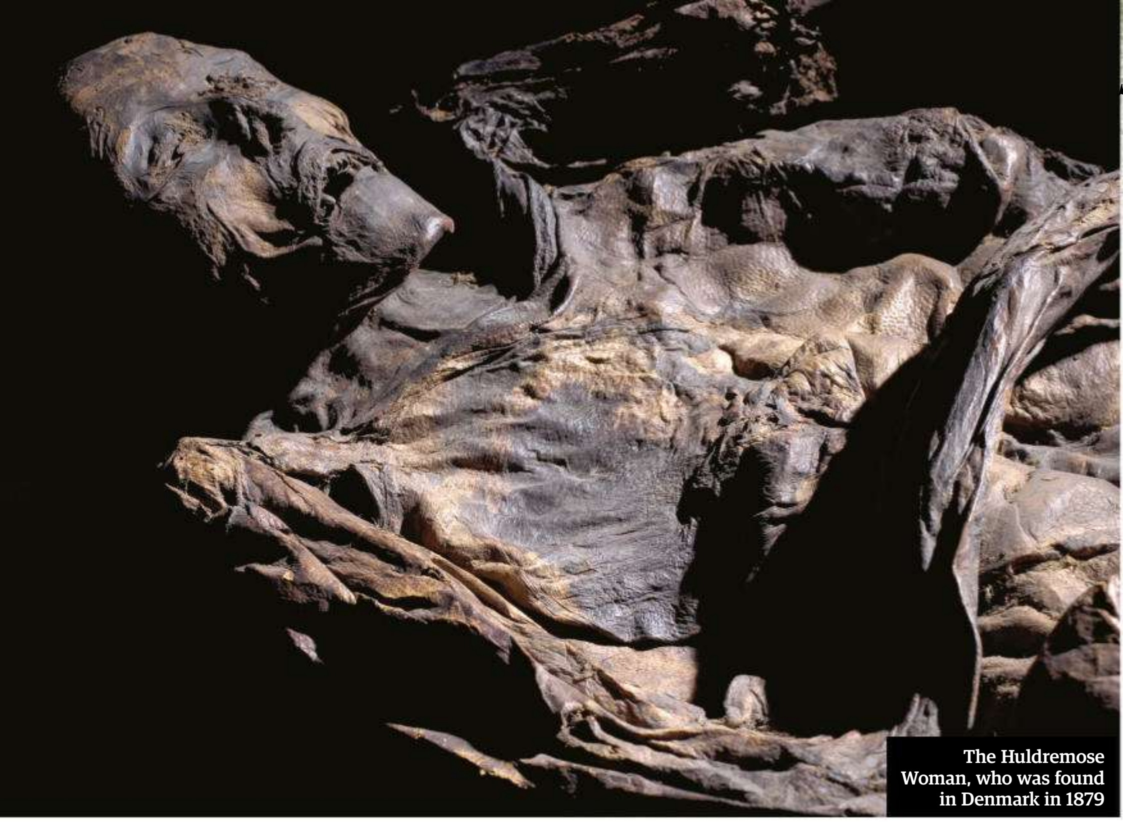
This 16-year-old, who lived in the early 1st or late 2nd century BCE, was found wrapped in a woollen cape in northeast Holland in 1897. She suffered from a curved spine and had long, reddish-blonde hair.

10 Old Croghan Man

At almost two metres, this man from County Offaly, Ireland, was unusually tall for his time. Possibly royal, he was in his early 20s when he died between 362 and 175 BCE. Only his torso survives today.

Areas with peatlands

None Less ← → More



The Huldremose Woman, who was found in Denmark in 1879

the sacrifice, the more pleased the gods would be. Even so, the possibility of how this and the other cauldrons were hidden to prevent them becoming the spoils of other tribes, later forgotten when the communities who interred them were displaced, cannot be ruled out. With no first-hand accounts to tell us for certain, we are only able to hazard conjectures. Yet as the evidence grows, so scholarship tends more towards the idea of ritualised offerings.

The greatest amount of Iron Age bog deposits in Denmark comprise swords, spearheads and shields that were bent or broken before being carefully arranged in bundles and placed in bogs or cast out into lakes. Serving as votive offerings to the gods, these weapons were usually the war booty from military clashes between Scandinavians and Romans. Of Denmark's many weapon-sacrifice sites, the most prominent is Illerup Ådal, where at least three deposits amount to thousands of items.

Julius Caesar, who related similar activities when he was in Gaul, corroborates the ritual purpose of these weapon-sacrifices. Ultimately, for having supplied the weapons for these conflicts to armies on both sides, Roman merchants profited the most.

Bog bodies are not known to accompany these types of deposits and the Danish weapon-sacrifices reached a peak of intensity between 200 and 450 CE, closely coincident with Roman expansion into northern Europe and the waning of ritual bog killings in Denmark. Furthermore, the emergence of a political nucleus in eastern Jutland at the same time could also have been a significant factor in the decline of the bog bodies as the weapon-sacrifices replaced the human ones.

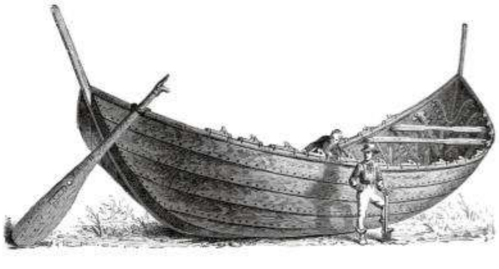
Surprisingly, Ireland's bogs have also turned up a considerable amount of Iron Age butter. Resembling cheese, the so-called 'bog butter' usually comes in earthenware pots, or wrapped in animal skins or bark. In 2013, a 5,000-year-old piece weighing some 45 kilograms was found in County Offay, and a 35-kilogram chunk that is 3,000 years old was found in County Kildare in 2009. Around 300 more examples have emerged. Since bogs make good natural fridges, it could simply be that the butter was deposited to preserve it, or improve the taste. Those brave enough to have tried recreations describe it as "gamey" and "funky". But if the intention was to retrieve it later, then why was so much butter left in the ground?

Perhaps they were survival caches, put away for leaner times and later forgotten. Yet since butter was valuable – and later used to pay taxes – it seems much more likely that they were sometimes buried as protection from thieves, or even made as sacred offerings to the gods.

The bog body phenomenon peaked around the 2nd century BCE before tailing off around the time that the Roman Empire was spreading into the north of Europe. It's worth mentioning that this was also a time when political power was being consolidated in eastern Jutland.

The pattern of the bog body deaths in similar ways and means suggests that, despite the great distances between them, the peoples of northwest Europe shared broadly similar perceptions about the sacred importance of ritual offerings made to watery places, even if the precise circumstances of individual bog bodies and depositions vary.

These beliefs lasted centuries and even survive today whenever a wish is made before throwing a coin into a fountain. Out there, somewhere in the mires, there must be other bog bodies that can tell us even more about why they came to be.



An illustration of the buried boat found at Nydham by Conrad Engelhardt in 1859

A PILGRIM'S PICKLING

Miranda Aldhouse-Green, emeritus professor of archaeology at Cardiff University, says that many bog people may have been on spiritual journeys

Recent research highlights the 'geographic outsider' status of two of the Danish bog bodies (the women of Huldremose and Haraldskær). Do you agree that this was the most important factor in their deaths?

This new interpretation is very important for endeavours to understand who these people were in life. In no way does it detract from the idea of the special status accorded those who ended up as bog people.

The idea of the spiritual journey makes total sense to the notion that Haraldskær Woman was some kind of religious leader, even a shaman. Pilgrimage was important in the ancient world and someone who had travelled widely would have been invested with exotic and powerful status. Not many people within Iron Age communities would have the opportunity to make such journeys; they would be expensive, time-consuming and potentially risky, so those undertaking them would not have done so lightly.

Do you think other bog bodies could have had a similar 'outsider' status?

I suspect this might be the case. I think I'm right in saying that there is evidence that Tollund Man also made a long journey in the months before he died. This idea has a particular interest in terms of the bog people who had some disability that made walking difficult, such as Yde Girl and Kayhausen Boy. For these individuals, a pilgrimage would itself have been a huge act of self-sacrifice.

Does scientific evidence support the theory that many bog people were ritually killed?

In speaking to colleagues involved in bog body research, particularly in Denmark, there is wide agreement that scientific techniques applied now serve to endorse and bolster ideas of ritualised deaths.

Of course, it is impossible to be dogmatic and assume that all the bodies we know about died in sacrificial circumstances, but the highly choreographed killings, the overkill violence and the 'last suppers' of so many all seem to point to the choice for bog-based ceremonies being wrapped around with ritual behaviour.

Which is your favourite bog body?

One is Haraldskær Woman and the other is Clonycavan Man from Ireland. New examination of both has the potential for revealing many more secrets associated with seasonality, status and links with foreign lands.

Is it right to display these kinds of human remains in much the same way as other artefacts?

Ethical issues are important. These are people, not artefacts, and need to be accorded respect. If they are to be displayed, the model of excellence is the Tollund Man room in Silkeborg Museum, where he resides peacefully in a small room decorated as though it were a bog, and where only a few people can see him at a time.

Bog Bodies Uncovered

Miranda Aldhouse-Green's book, *Bog Bodies Uncovered: Solving Europe's Ancient Mystery*, is published by Thames and Hudson.

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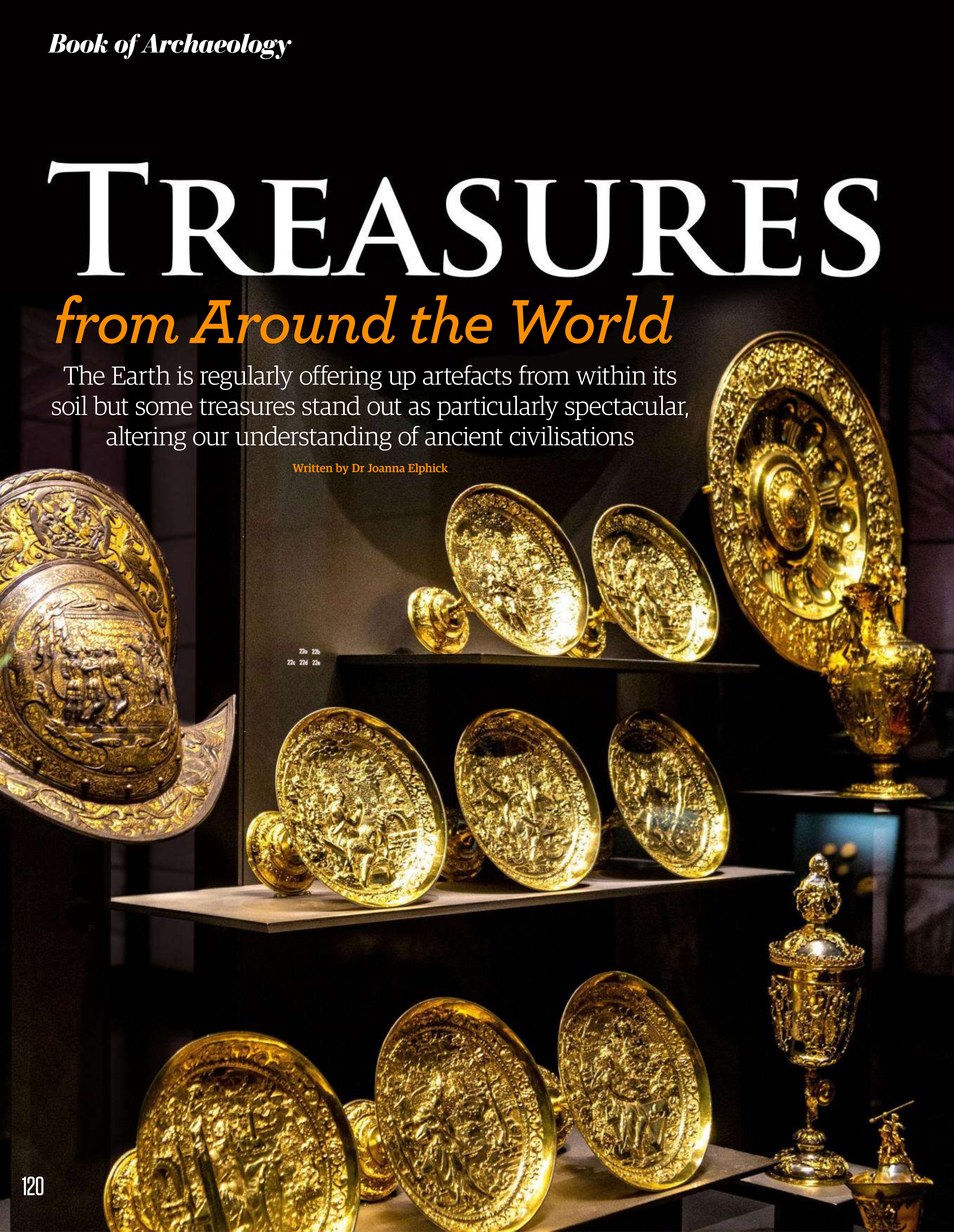
TREASURES

from Around the World

The Earth is regularly offering up artefacts from within its soil but some treasures stand out as particularly spectacular, altering our understanding of ancient civilisations

Written by Dr Joanna Elphick



THE MASK OF AGAMEMNON

A golden face shrouded in a mystery that academics are still trying to solve

In 1876, while on a dig at the ancient site of Mycenae, German archaeologist, Heinrich Schliemann, stumbled across a number of bodies. The eight men had been buried with reverence, their bodies surrounded by weapons. One in particular caught the eye of Schliemann since he wore a mask of pure gold. This, Schliemann believed, was the body of King Agamemnon as immortalised by Homer in the Greek epic, *The Iliad*.

Although there were five masks in total, the Mask of Agamemnon was by far the most beautiful. It had been made from a sheet of solid gold. Its creator had hammered out a three-dimensional face with eyes that were both open and closed at the same time. Details of arched eyebrows, a pointed beard and moustache were delicately etched in place. It was certainly a magnificent find but was it all that Schliemann claimed it to be?

Some scholars implied that the archaeologist had found the artefact elsewhere and planted it at the dig, while others went so far as to suggest he had actually fashioned the mask himself. Today, academics believe the find is genuine but that it cannot be the Mask of Agamemnon since it was almost certainly manufactured long before the alleged Trojan War.

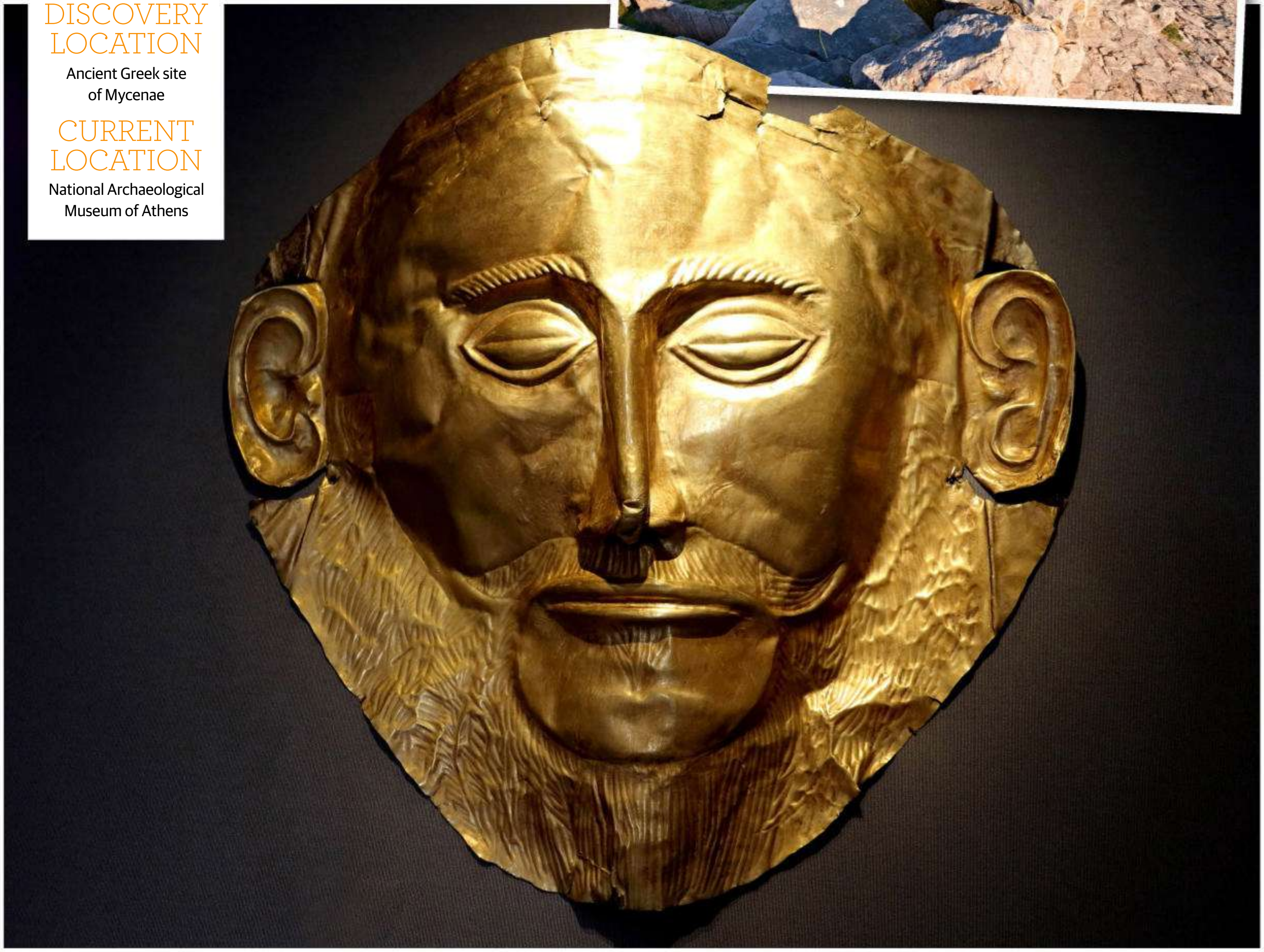
Grave circle at Mycenae

DISCOVERY LOCATION

Ancient Greek site of Mycenae

CURRENT LOCATION

National Archaeological Museum of Athens



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ROSETTA STONE

A broken slab that cracked the mysteries of Egyptian hieroglyphs

The stone contains 14 lines of hieroglyphic script, 32 lines written in Demotic and 54 lines in Ancient Greek

On 15 July 1799, Napoleon Bonaparte's army stumbled across a piece of a stone slab while building a fort near Rosetta in the Nile Delta. Although they were unsure of its use, they were certain of its importance and intended to spirit it away to France, but they soon lost control of the find when they were defeated by the British Army who brought the object back with them to England.

The strange stone was covered in writing that repeated the same message in three languages: Ancient Greek, Demotic Egyptian script and finally hieroglyphs. For centuries, the ability to read hieroglyphs had been lost as they went out of use some time at the end of the 4th century CE, but since academics were more than capable of translating Ancient Greek, they realised that this stone could be the key to unlocking the secret of these beautiful pictograms.

Initially, it was established that the writing concerned King Ptolemy V and later, that the hieroglyphs replicated the sound of the Egyptian language. Both English and French experts worked tirelessly on the texts until the mystery was finally solved. By deciphering the pictograms, scholars were in a position to begin discovering new and fascinating aspects of the Ancient Egyptian civilisation.

It is now understood that the Rosetta Stone is just one of many copies of a decree that upheld the support of the King by various temple priests. The declaration was supposed to be placed in every large temple across Egypt. In fact, you could argue that this incredibly important archaeological discovery is really nothing more than an ancient photocopy!

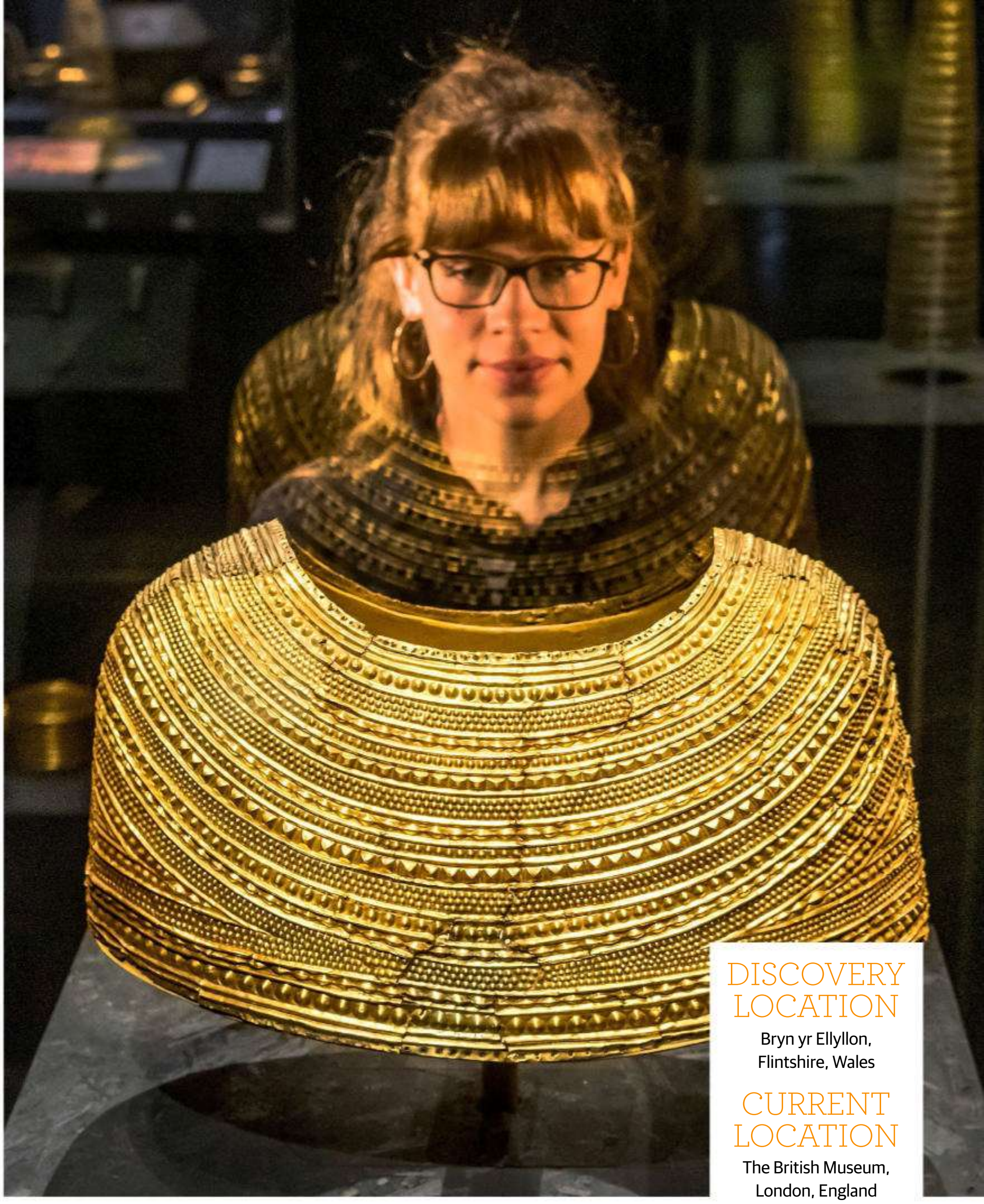
Of course, its significance is far greater than the actual statement written on the stone, for it has acted as the key to a doorway into Egypt's past.

DISCOVERY LOCATION

Rosetta (Rasheed), Egypt

CURRENT LOCATION

The British Museum, London, England



DISCOVERY LOCATION

Bryn yr Ellyllon, Flintshire, Wales

CURRENT LOCATION

The British Museum, London, England

MOLD GOLD CAPE

A stunning funeral cape that lay hidden beneath Goblin's Hill

Discovered within a burial mound and dating from between 1900 to 1600 BCE, the Mold Gold Cape is a magnificent example of British Bronze Age craftsmanship. The cape had been damaged but, on closer inspection, it was clear that this had been a vitally important and significant piece of clothing, possibly designed as part of a ceremonial outfit. This meant that the body in which the cape had been wrapped must have been equally powerful.

The cape itself had been beaten out of a single gold ingot and then decorated with hundreds of golden bosses in varying shapes and embellished with rows of amber beads. Sadly, only one bead survived. Gold straps would have held the heavy clothing in place and it is thought that it would have been lined in leather for ease of comfort. As the artefact was removed from the stone-lined grave, it began to disintegrate and the fragments were taken by various scholars. However, the British Museum had now acquired the majority of the pieces with a small number displayed in the local museum in Mold. Gradually, the British Museum has restored the cape to its magnificent former glory where it can be viewed today.

Amber beads have been used as a form of decoration for over 13,000 years; as far back as the Stone Age

TRUNDHOLM SUN CHARIOT

A national symbol of Denmark and a fine example of a religious artefact from the Bronze Age

In 1902, when a Danish farmer spied a metal horse lying in the mud, he thought he had spotted an old toy his children might like to play with, but on closer inspection he realised that this was far more important than a child's plaything. Nearly 100 years later, amateur detectorists discovered 21 more elements of the statue, including axles and spokes. The National Museum of Denmark has now restored the find - an outstanding example of an aspect of Scandinavian religion from 1400 BCE.

The Sun Chariot is 54 centimetres (21 inches) long with rotating wheels. It carries a 25-centimetre (9.8-inch) disc and is pulled by an elegant horse. It represents the never-ending journey of the Sun as it travels across the sky and relates to the Scandinavian Sun goddess, Sol.

The Sun Chariot was created using the 'lost wax' method, where a wax model containing a clay centre is covered in more clay and then heated until all the wax has melted, leaving the hollow shape that can be used as a mould for molten metal.

The object is as stunning as it is significant, an excellent example of Bronze Age spirituality and post-Neolithic craftwork.

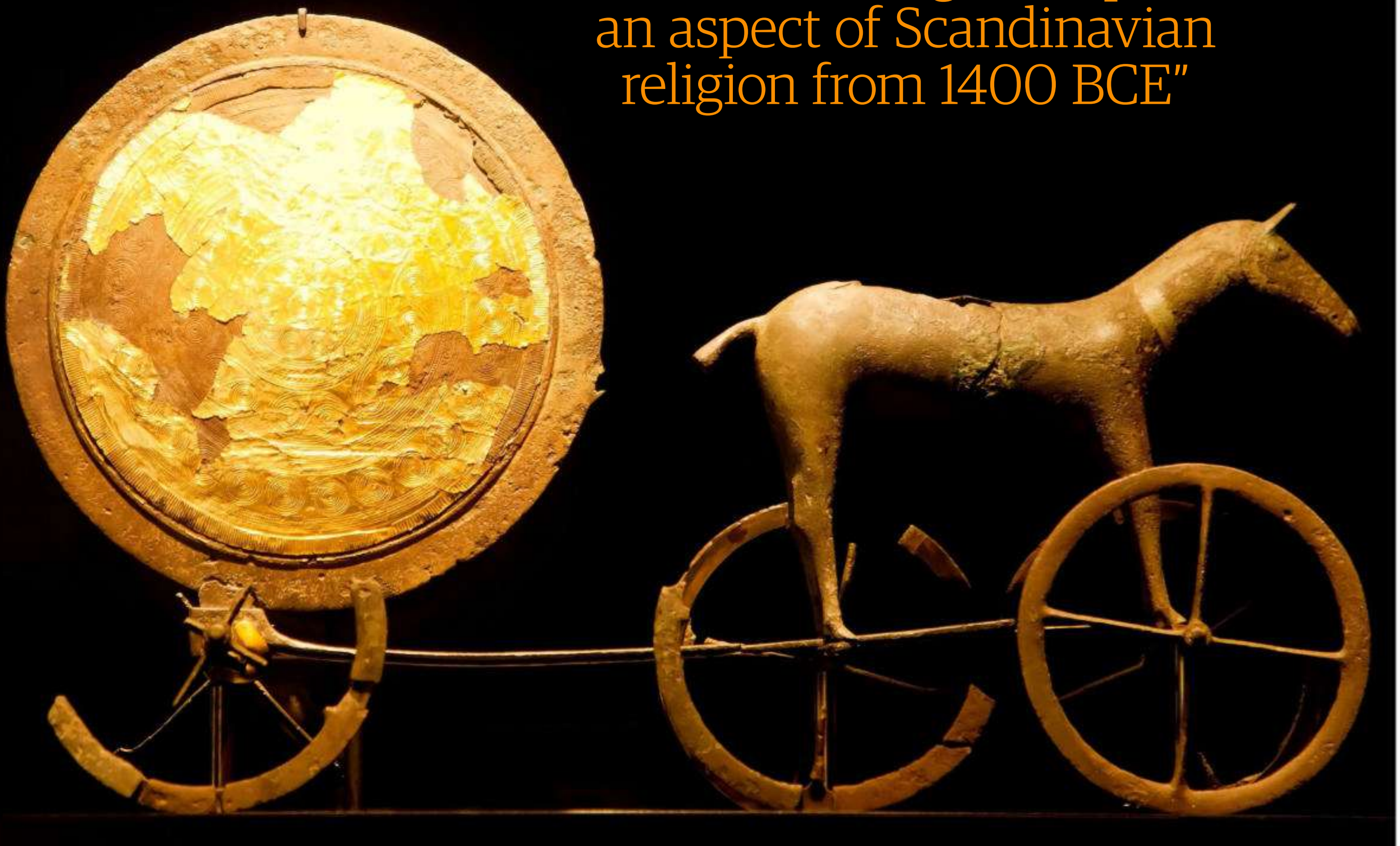
DISCOVERY LOCATION

Trundholm, Denmark

CURRENT LOCATION

The National Museum of Denmark, Copenhagen, Denmark

"An outstanding example of an aspect of Scandinavian religion from 1400 BCE"



Cast in bronze and gilded with gold leaf on the sun disc. Damage on the back reveals the clay core

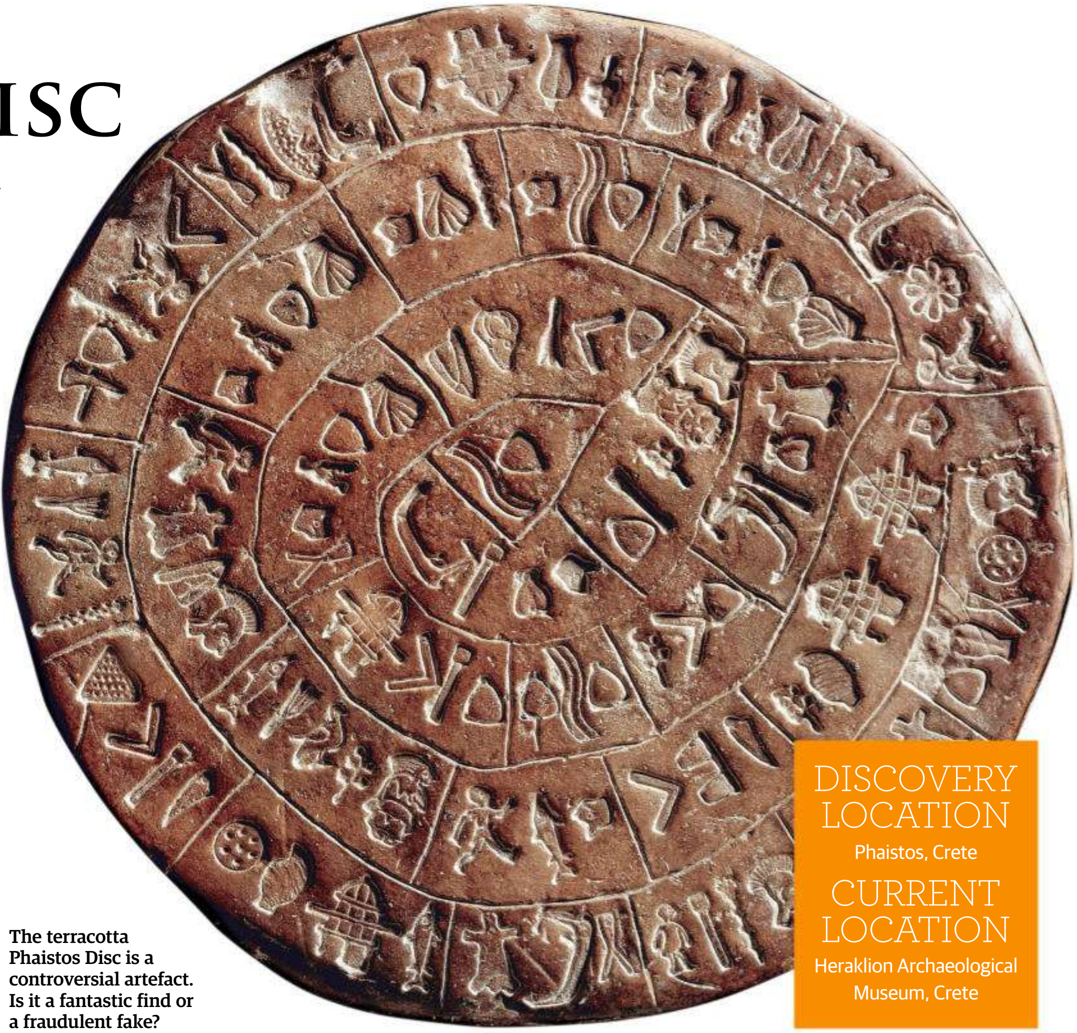
© Alamy, Getty Images

PHAISTOS DISC

Is it a prayer, a curse, a poem or a shopping list? Nobody knows!

The fired-clay disc is covered in inexplicable symbols that have been stamped on both sides in a spiral shape. It is thought that the images have been pushed into the clay with metal dies or seals, which is shocking considering this method would not be seen anywhere else in the world until 1450 CE. However, its creation is not the only unusual aspect.

Academics have studied the ancient cylindrical disc since its discovery in 1908 on the site of a Minoan city palace. Experts have argued over every aspect of this mysterious artefact , even down to its date, which could be any point in the second millennium BCE. However, the most mysterious element is undoubtedly the symbols themselves. No one is sure which one of the key writing systems have been used but most scholars believe the syllabary system has been applied, whereby symbols represent phonetic syllable sounds. The language is also unknown and this makes discovery of its meaning and use impossible, although many theories have been suggested including an Egyptian board game, a Minoan prayer, even a nursery rhyme. However, others dismissively claim it is a forgery designed to waste academics' time



The terracotta Phaistos Disc is a controversial artefact. Is it a fantastic find or a fraudulent fake?

DISCOVERY LOCATION

Phaistos, Crete

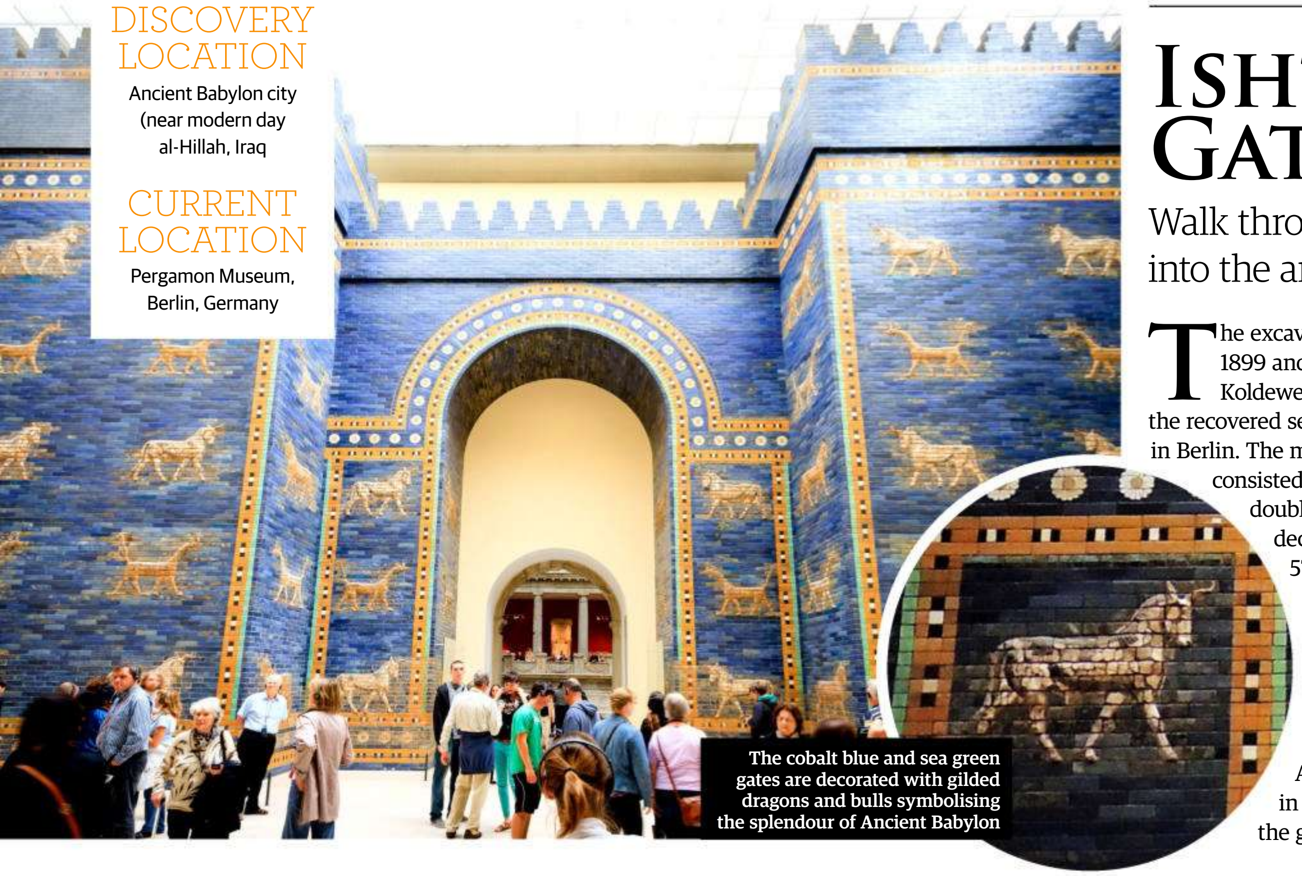
CURRENT LOCATION

Heraklion Archaeological Museum, Crete

ISHTAR GATE

Walk through the Ishtar Gate into the ancient city of Babylon

The excavation of Ishtar Gate began in 1899 and lasted until 1917 when Robert Koldewey, a German archaeologist, brought the recovered sections back to his homeland in Berlin. The magnificent edifice originally consisted of a 12-metre (39-feet) high double gate built in burnt bricks and decorated with glazed bricks and 575 ornamental dragons and bulls. A huge antechamber protruded from the south side. The gate opened up onto an avenue known as the Processional Way, which ran for over half a mile and was decorated with mighty lions. Although the original pieces remain in Germany, the Iraqis have rebuilt the gate onto a raised thoroughfare.



The cobalt blue and sea green gates are decorated with gilded dragons and bulls symbolising the splendour of Ancient Babylon

DISCOVERY LOCATION

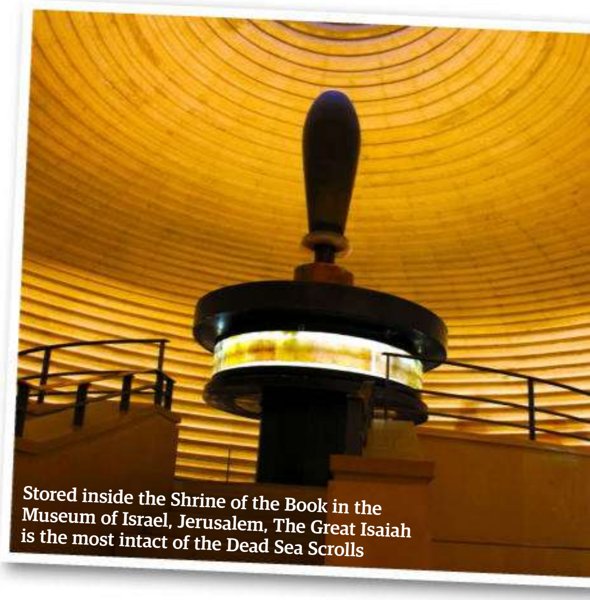
Ancient Babylon city (near modern day al-Hillah, Iraq

CURRENT LOCATION

Pergamon Museum, Berlin, Germany

DEAD SEA SCROLLS

Fragmented documents that offer a tantalising glimpse into the relationship between early Christian and Jewish religious traditions



Stored inside the Shrine of the Book in the Museum of Israel, Jerusalem, The Great Isaiah is the most intact of the Dead Sea Scrolls

Comprising some 15,000 fragments, the fragile manuscripts are made of papyrus, leather and copper. Although the Scrolls were discovered between 1946 and 1956 across five key sites, the initial manuscripts were found in 11 caves near the ruins of Qumran and are dated between 3rd century BCE to 2nd century CE. The Ancient Jewish custom of 'genizah' dictated that old sacred manuscripts should be stored in earthenware jars and either buried in the sand or deep within a cave, and it was in such a set of jars a Bedouin shepherd boy discovered the original Scrolls. Archaeologists believe that there were at one point up to 900 original Scrolls but many have disintegrated, while others are very badly preserved. The texts, which are mainly written in ancient Hebrew, cover a multitude of religious topics including Hebrew Scriptures and other books that were not canonised in the Hebrew Bible, while other Scrolls are sectarian and include the War Scroll and the Community Rule. These sectarian texts are historically important since they shine a light upon the culture and beliefs of a little-known Jewish group, the Essenes. The notion of one unified Judaism was completely obliterated by the discovery since they clearly show a variety of practices and belief systems within the faith. It also displays the earliest glimmer of Christianity and Rabbinic Judaism.

The magnificent Copper Scroll presents a list of temple treasures and where they were hidden, while a collection of manuscripts stored together are thought to be part of an Essene library. The Temple Scroll consists of 66 columns that lay out the plans for constructing the perfect Temple of Jerusalem. Like all good archaeological treasures, the Dead Sea Scrolls help us to see the complex formation of an ancient civilisation and its religious development over time.

DISCOVERY LOCATION

Various sites across the Judean wilderness in the Dead Sea region

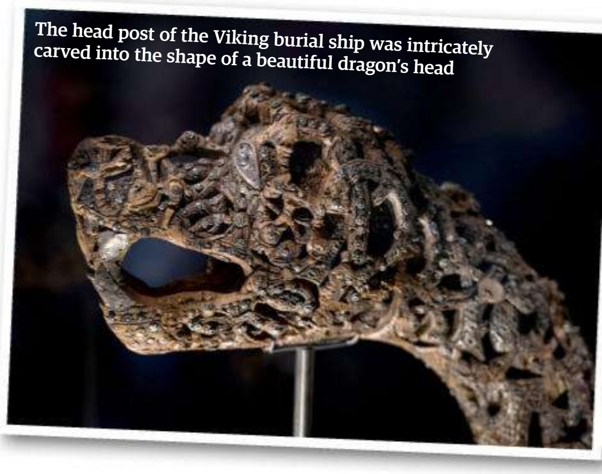
CURRENT LOCATION

The Israel Museum, Jerusalem and The Jordan Museum, Amman

© Alamy, Getty Images

OSEBERG SHIP

Step aboard the most beautiful Viking burial ship ever discovered

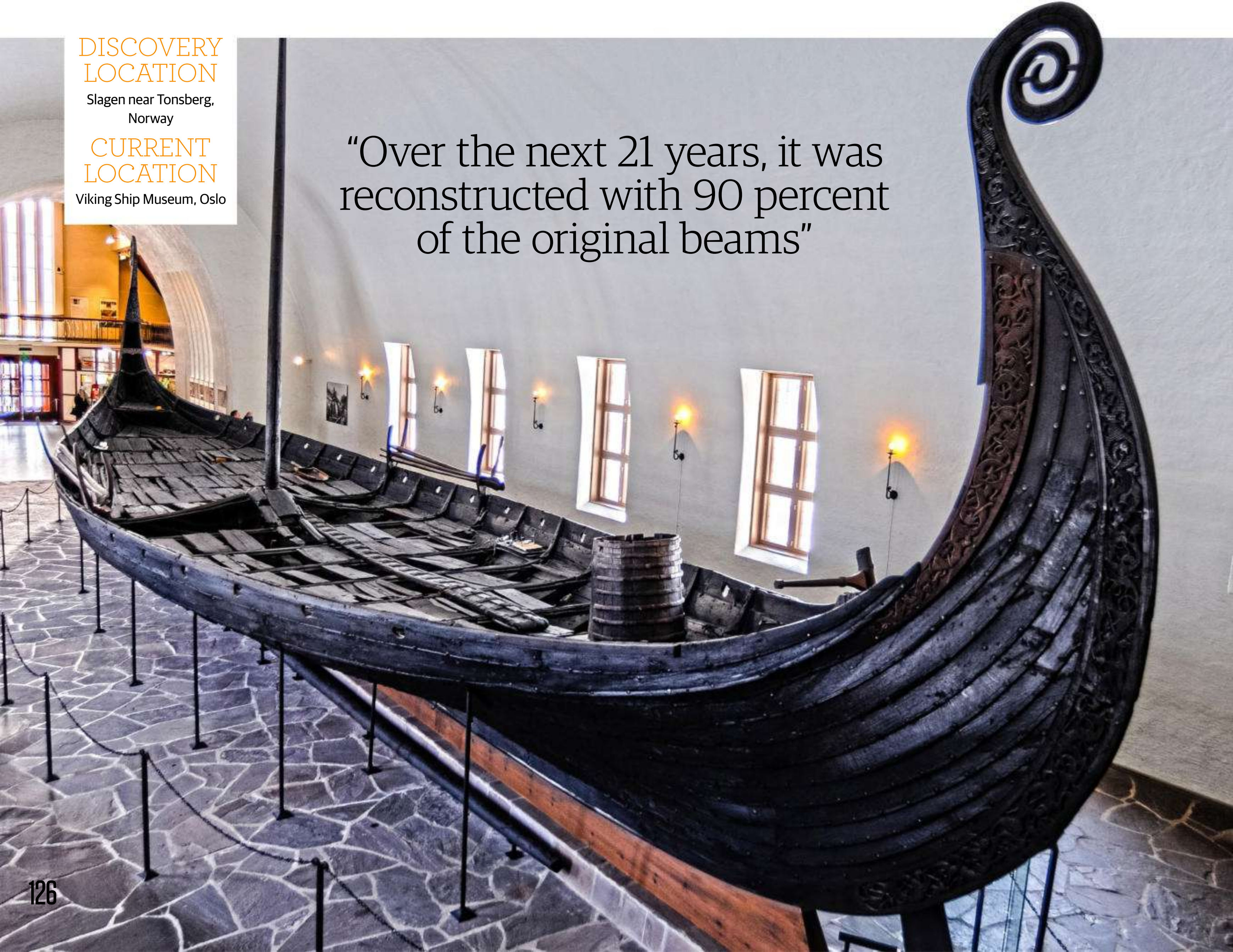

The head post of the Viking burial ship was intricately carved into the shape of a beautiful dragon's head

Measuring 5.4-metres (17.8-feet) long and five-metres (16.7-feet) wide, the Oseberg ship is considered to be the oldest Viking vessel ever found, as well as one of the best-preserved specimens. It was discovered by Oskar Rom, a Norwegian farmer, but as soon as he realised the interesting mound on his land contained something of significance, he sold it to Professor Gustafson, an archaeologist from the University Museum of National Antiquities. Having realised that a Viking longship was buried beneath the barrow, he gathered together an expert team and started excavating in 1904. Three months later he had revealed one of the most important artefacts from the Viking era.

Despite the fact it had remained buried for over a thousand years, it was in amazing condition, mainly due to the damp clay conditions that preserved the wood. Unfortunately, because that self-same clay was remarkably heavy, it had caused the ship's structure to cave in. Each piece of oak timber was carefully removed and, over the next 21 years, it was lovingly reconstructed with 90 percent of the original beams.

The ship had been expertly carved with animals and figures highlighting the craftsmanship of the Viking civilisation. Within a wooden tent lay two women, one of which was clearly of high status while the other younger woman is thought to have been a slave. Through examination of their bones and teeth, experts have been able to gather a far greater understanding of the lifestyle and culture of wealthy Vikings. Animal bones, probably sacrificial offerings, were also discovered alongside some magnificent personal belongings and luxurious fabrics.

The burial ship is not only staggeringly beautiful, but also of vital importance to historians who can now begin to understand the complex funeral rites, attitudes towards high-born women and impressive skills of the Viking civilisation.



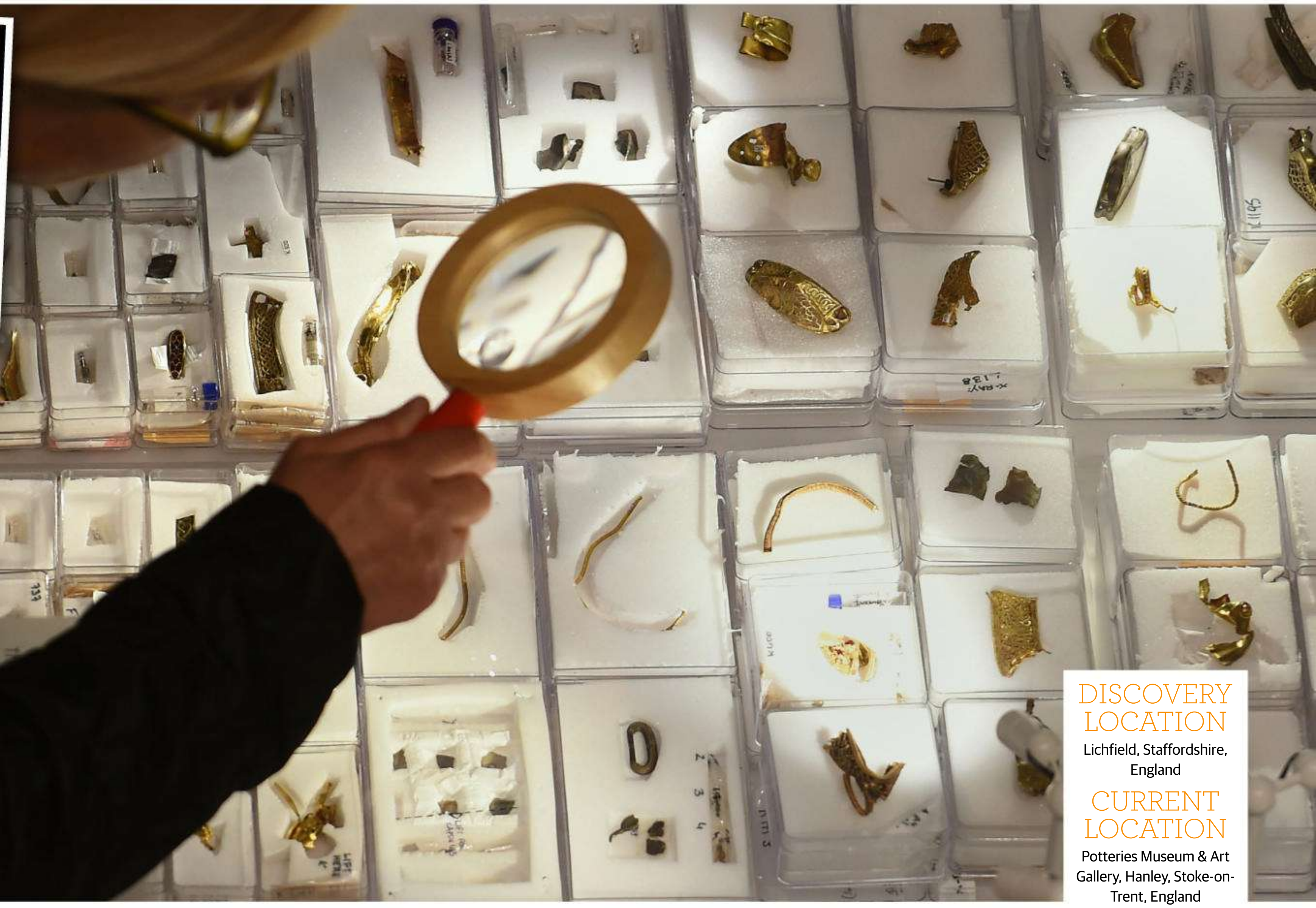
DISCOVERY LOCATION

Slagen near Tonsberg, Norway

CURRENT LOCATION

Viking Ship Museum, Oslo

"Over the next 21 years, it was reconstructed with 90 percent of the original beams"



DISCOVERY LOCATION

Lichfield, Staffordshire, England

CURRENT LOCATION

Potteries Museum & Art Gallery, Hanley, Stoke-on-Trent, England

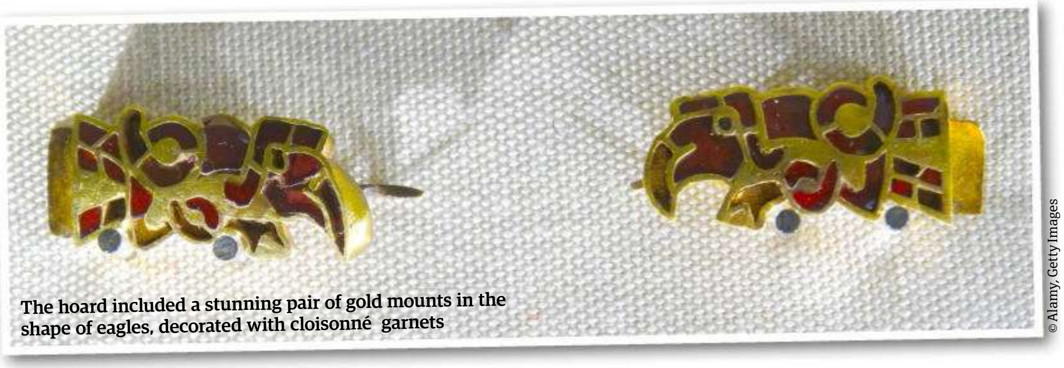
STAFFORDSHIRE HOARD

An incredible collection of Anglo-Saxon gold and silver metalwork

When detectorist Terry Herbert discovered the Staffordshire Hoard, he knew he had stumbled across something big, but he had absolutely no idea that he had in fact found the largest collection of Anglo-Saxon war gear ever to be unearthed. Unlike most Anglo-Saxon hoards, which predominantly comprise of jewellery and coins, the Staffordshire Hoard consists of over 4,000 fragments of weapons and armour.

A thousand pieces have been reassembled to create a stunning helmet, which clearly displays the incredible skills of the Anglo-Saxon craftsmen. The headgear is one of the most ornate examples ever discovered and could well have belonged to a high-born dignitary or possibly a king. Many of the pieces have been decorated with filigree work while some of the sword fittings are encrusted with garnets and various semi-precious stones.

Experts are unsure as to why the hoard was buried. Some believe the collection was hidden to avoid confiscation by another warring tribe, while others believe the collection was part of a Pagan offering. A number of academics have claimed that some of the fragments were ripped away from the larger artefacts, since many pieces have been bent out of shape and appear to have been mistreated.



The hoard included a stunning pair of gold mounts in the shape of eagles, decorated with cloisonné garnets

© Alamy, Getty Images

SUONTAKA GRAVE

An archaeological find that obliterates gender norms and cultural expectations

In 1968, during construction work in the sleepy village of Suontaka, a weapon grave from the 11th century was accidentally uncovered. Oval brooches, furs and woollen fibres befitting the attire of an Early Middle Ages female initially suggested that this was the grave of a high-born woman. However, the discovery of a hiltless sword and a second sword with a bronze handle proved the burial to be a weapon grave. The body had been laid upon a feather blanket and clearly treated with the utmost respect and dignity, so could this have been a successful female warrior? Some archaeologists offered up an alternative theory. Perhaps this was a double grave for both a woman and her warrior husband.

Expert scientists from various universities were invited to investigate by carrying out DNA testing. Unfortunately, they had very little in the way of samples to work with.

However, results showed that it was a single grave and that the body belonged to an individual with Klinefelter syndrome, whereby a male is born with an extra X chromosome, giving them both male and female characteristics. Far from shunning this unusual person, the community embraced their differences, something the modern Western world still struggles to achieve.

DISCOVERY LOCATION

Suontaka
Vesitorninmaki, Hattula,
Finland

CURRENT LOCATION

National Museum
of Finland

Those suffering with Klinefelter syndrome will often display visual characteristics of both a male and female, such as a penis and breasts, due to the extra X chromosome

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CUNETIO HOARD

A stone jar that acted like a gigantic Roman piggy bank

The Savernake Ware pottery jar was discovered close to Mildenhall on the outskirts of a long-since forgotten Roman town. Archaeologists had discovered the footings of a temple and it is here that the hoard was recovered. The jar and a lead box contained 54,951 silver radiates and denarii, the largest Roman coin hoard ever discovered. It is estimated that the money was buried in or around 274 CE, where it lay undisturbed until 1978, when detectorists unearthed the treasure.

Although the pottery jar had been smashed into many small pieces, the recovered fragments have been lovingly restored into a near complete vessel.

DISCOVERY LOCATION

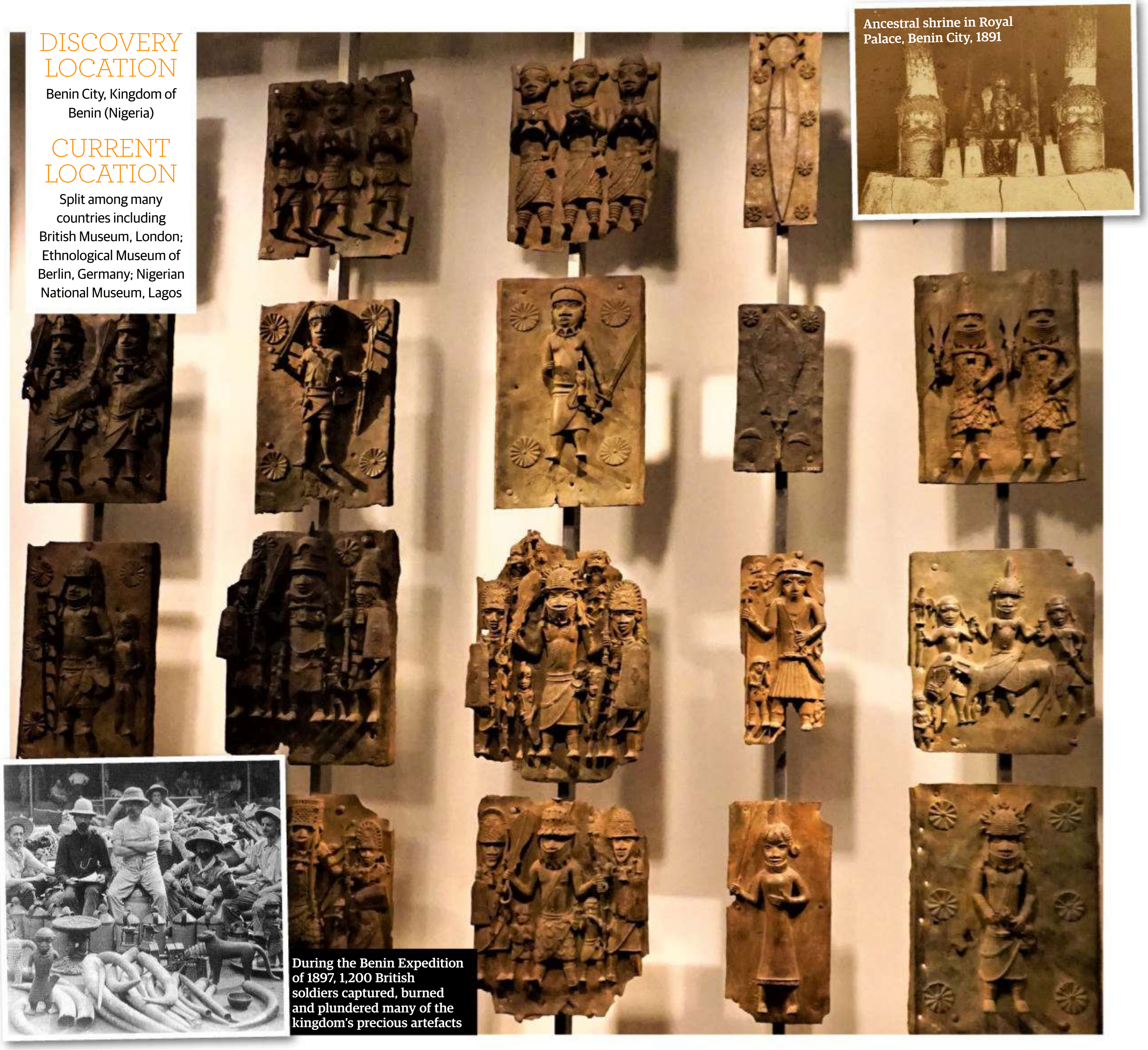
Roman town of Cunetio,
near Mildenhall,
Wiltshire, England

CURRENT LOCATION

COINS – British Museum,
London, England
JAR – Wiltshire Museum,
Wiltshire, England

> "The largest Roman coin hoard ever discovered"

The vast collection of Roman coins which were dated between AD 250 275, weighed over 180 kilograms



DISCOVERY LOCATION

Benin City, Kingdom of Benin (Nigeria)

CURRENT LOCATION

Split among many countries including British Museum, London; Ethnological Museum of Berlin, Germany; Nigerian National Museum, Lagos

Ancestral shrine in Royal Palace, Benin City, 1891

During the Benin Expedition of 1897, 1,200 British soldiers captured, burned and plundered many of the kingdom's precious artefacts

BENIN BRONZES

A series of beautiful plaques celebrating the history of Benin and its people

Originally, the thousands of metal plates and statues, known collectively as the Benin Bronzes, adorned the walls of the Royal Palace in the Benin Kingdom, but today they are scattered in museums around the world. The British Museum's exhibition is particularly controversial, since it was obtained during Britain's imperial colonisation. Many other countries have returned their collections to Nigeria. The British Museum has retained its collection but is in negotiations with the Nigerian Federal Ministry of Information and Culture to support an online display of the Bronzes, known as Digital Benin.

Although known as 'bronzes', many are actually made of brass, coral, wood, ivory and even leather. Other items in the collection include sculptures of human figures and animals, commemorative heads, and objects made specifically for the King or 'Oba' in honour of the royal dynasty. Much can be learnt from the plaques, created from around the 16th century onwards, as they depict the history of the royal family, life in the Kingdom of Benin, ceremonial rituals and trade relationships that were formed with other nations over the centuries. In this way, the statues and elaborate panels are not only beautiful archaeological artefacts, but also vital historical documentation.

© Getty Images, Wikipedia

AZTEC CALENDAR STONE

A gargantuan ancient stone sculpture from Mexico

At 3.7 metres (12.1 feet) in diameter, 1.2 metres (3.9 feet) thick and weighing in at approximately 24,590 kilograms (54,210 pounds), the circular Calendar Stone is fascinating and impressive. The face of the Aztec Sun god, Tonatiuh, has been carved into the centre of the basalt stone and surrounded by four square sections, each representing a former incarnation of the deity which, in turn, shows the four previous ages of the world. Symbols, representing the 20 days of the Aztec month, appear around the edge.

Although referred to as a 'calendar', it is more accurate to call it the Aztec Sun Stone as it represents the last of the Aztec cosmological eras. Scholars believe it is likely to be a ceremonial altar and, since Tonatiuh holds a human heart in his claws, suggests sacrifices were required to ensure the Sun would continue to travel across the sky.

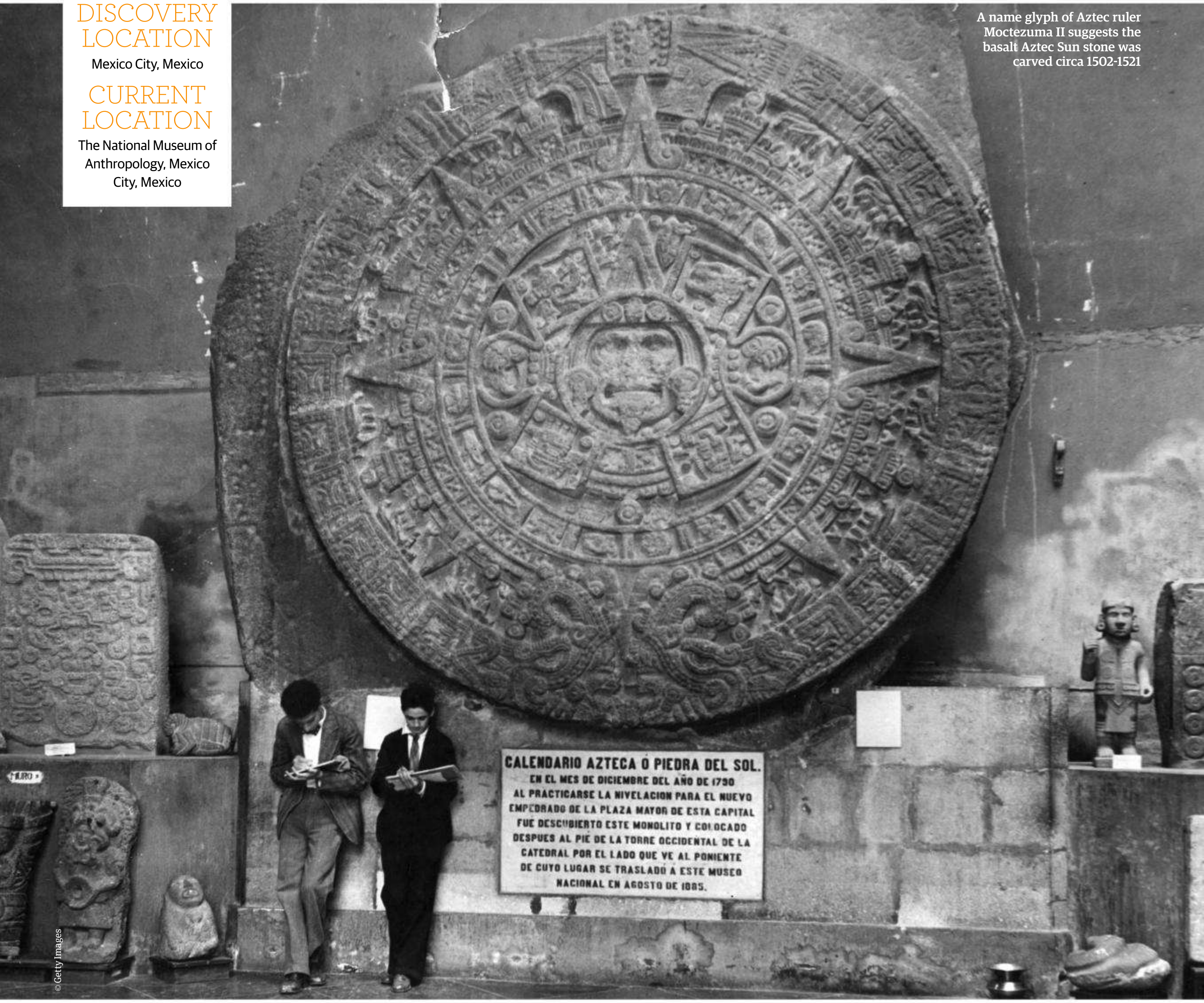
As religious beliefs changed, the stone was buried but rediscovered in 1790 as builders began working on Mexico City's Plaza. Initially, the artefact was hauled up into a vertical position and left on display in the open but it was moved into the cathedral and later, into the Museo Nacional.

DISCOVERY LOCATION

Mexico City, Mexico

CURRENT LOCATION

The National Museum of Anthropology, Mexico City, Mexico



A name glyph of Aztec ruler Moctezuma II suggests the basalt Aztec Sun stone was carved circa 1502-1521

CALENDARIO AZTECA Ó PIEDRA DEL SOL.
EN EL MES DE DICIEMBRE DEL AÑO DE 1790
AL PRACTICARSE LA NIVELACION PARA EL NUEVO
EMPEDRADO DE LA PLAZA MAYOR DE ESTA CAPITAL
FUE DESCUBIERTO ESTE MONOLITO Y COLOCADO
DESPUES AL PIE DE LA TORRE OCCIDENTAL DE LA
CATEDRAL POR EL LADO QUE VE AL PONIENTE
DE CUYO LUGAR SE TRASLADÓ Á ESTE MUSEO
NACIONAL EN AGOSTO DE 1885.

© Getty Images

ARCHAEOLOGY

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